RIVER SHANNON NAVIGATION.

LETTER from Colonel JOHN F. BURGOYNE to the Right Hon. Sir JOHN CAM HOBHOUSE, Bart.; and further REPORTS of Mr. RHODES, on the Improvement of the Navigation of the RIVER SHANNON.

(*Mr. Rice.*)

Ordered, by The House of Commons, *to be Printed,*
10 *June* 1833.

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These Plans are inserted in the First Report, 11th August 1832, (731), and are marked with the numbers here prefixed to them.

SHANNON NAVIGATION.

I.

LETTER from Colonel *John F. Burgoyne* to the Right Hon. Sir *John Cam Hobhouse*, Bart.

SIR, Office of Public Works, Dublin, 30th April 1833.

Col. Burgoyne to Sir J. C. Hobhouse.

I HAVE the honour to transmit, for the information of the Lord-Lieutenant, the sequel and completion of the Reports by Mr. Rhodes, Civil Engineer, on the River Shannon.

Review of Proceedings.

The former parts of this extensive undertaking were submitted in May 1832, and, with the instructions under which the Survey has been conducted, were printed, by order of the House of Commons, at the close of last Session of Parliament.

It may now be desirable to take a review of the nature of the whole proceedings.

The River Shannon, rising within 15 miles of Sligo, in the north of Ireland, and falling into the sea below Limerick, in the south, cuts the country longitudinally in two parts, dividing the five counties comprising the province of Connaught from the rest of the kingdom: It thus forms a feature of the greatest importance, as the means of drawing off the waters from an immense range of country; of maintaining internal intercourse; and on account of its outlets with the sea to Limerick, on the south-west; and by means of two great canals leading from different parts of its waters, to Dublin on the east coast.

The attention of Government having been called to the imperfections existing in this great river, and to the propriety of ascertaining its present state, and its capabilities, a Commission was appointed for that purpose, consisting of Captain Mudge, R. N., Thomas Rhodes, Esq. Civil Engineer, and myself. Our preliminary arrangements have been explained in the first set of Reports; and the Government are now put in possession of the final result of the investigation.

The Shannon requires to be considered in several distinct portions, which vary in character, and are influenced by very different circumstances.

The interval from the sea to the port of Limerick, a distance of 80 miles, has been minutely described in the Reports of Captain Mudge, who points out the numerous difficulties and dangers, as well as the neglected state, of this part of the navigation; suggesting, at the same time, the means by which much of the inconvenience might be removed or alleviated. It appears, however, that there are not any funds allotted to this very necessary object, nor even any one entrusted with the smallest charge or authority, in consequence of which neglect, the port of Limerick, which ought to be the rallying point of a very extensive trade, struggles against impediments that must continue to draw from it many of its natural resources, unless some remedy be applied to the evil, by its principal, local and commercial interests.

It has been proposed to construct floating docks, and other immediate conveniences for the trade; but though such works might be useful, still, unless the navigation of the river be put into a tolerable state, they would bear the character of a fine edifice to which the approach is scarcely practicable.

At Limerick, shallows and rapids commence so immediately in the river, that the tide has but little influence above; and it has become necessary to have recourse to the means of a short canal from the city itself.

Ascending from thence to Killaloe, (a distance of 15 miles,) the navigation, partly by the river, and partly by side canals, is in the hands of the Limerick

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Navigation Company, (as explained in my former Statement of 28th May 1832,) and its state is fully described in Mr. Rhodes' Report of that period.

Lough Derg.

From Killaloe commences the great lake called Lough Derg, 23 miles in length, and from one to four miles broad, with wide deep bays and inlets.

This lake is, generally speaking, free from the dangers of rocks or shoals, but its very expanse of water rendered it unfit for the class of vessels that worked upon the still water, and imperfect navigation at either end; and considerable delay was occasioned to the sailing vessels by the circumstance of the prevailing winds being in the direction of its greatest length. These two causes, added to the languid state of commercial intercourse in the interior of Ireland, will account for the very little advantage that was formerly derived from this fine feature; which thus, instead of being a valuable resource to the internal communication, became a considerable barrier between the lower and middle portions of the river.

The employment of steam vessels on the lake (as adverted to in my former Report) has removed these impediments; the canal boats are now towed across in a few hours, without reference to the direction of the wind; the two portions of the river become perfectly connected; and the whole of the resources of the shores of the lake, and its tributary branches and streams, are fully opened to an easy water-carriage.

Nothing is wanted to develope these advantages more perfectly but the construction of a few beacons, on the best and most permanent plan, with the establishment of landing quays, and occasionally a small pier for shelter, in the parts most favourably situated for trade. These would be works of small expense.

The Middle Shannon, that is, the interval between Lough Derg and Lough Ree, comprises 36 miles of generally broad deep river, with occasional shoals and obstructions, natural or artificial, which are passed by lateral canals. Nearly midway between the extremities of this portion of the Shannon the Grand Canal branches off, on one side to Dublin, 80 miles distant, and on the other, 13 miles, to Ballinasloe, in the county of Galway.

The difficulties that so long attended the navigation of Lough Derg, as above described, and which were even more strongly felt on Lough Ree, tended to make the middle branch of the Shannon serve merely as a feeder to the trade of the Grand Canal; and consequently it was consigned by the Directors of Inland Navigation, in 1806, to the Company of Proprietors of that canal, with an advance of 54,634 *l.* 18 *s.* 7 *d.* for certain works and repairs, and under an agreement to keep it in a proper state of efficiency.

Although more than that sum was expended, the works were very imperfectly executed; and by one of the accompanying Reports it will be perceived that the engagement for its maintenance has not by any means been adhered to, but that, on the contrary, the whole line is in a state of dilapidation: the charge is, indeed, too great for the Company, who have besides but little interest in its preservation.

Whatever may hitherto have been proper policy, it seems very desirable, if possible, to prevent a Company having a partial interest from exercising a control over a general line of communication. However conscientiously they may desire to act, a prevailing impression must exist that their peculiar interests will be chiefly consulted; and it is reasonable to expect that such will be the indirect tendency of many of their operations.

Lough Ree.

Lough Ree is 17 miles in length, and bears nearly the same character as Lough Derg, with the exception that its principle line of sailing course is somewhat more obstructed by rocky shoals.

In the Upper Shannon, namely, from Lough Ree to Lough Allen, (46 miles,) the shoals are more frequent and extensive than in the lower portions, though still the small lakes and river afford very generally a deep wide channel.

Many lateral canals and other works have been executed at different periods by Government, to open the navigation of this part; they are, however, extremely imperfect and defective, as will be seen by one of the accompanying Reports, which explains in detail the great impediments existing in this upper district.

Lough Allen.

Lough Allen, which forms the source of the Shannon, is 10 miles long and four or five wide, and as yet but very little used for water communication.

From the above sketch it will be perceived how very imperfect is the state of the whole navigation of the Shannon.

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Imperfect state of the Navigation.

Independent of the original bad construction of the several canals, locks and other works, the passage of vessels is very much obstructed in summer by want of water to pass shoals, while in winter (the banks and adjoining lands being low) the whole face of the country is inundated, which renders it impossible to make use of a towing-path, and even difficult to ascertain the course of the navigable bed of the stream.

It is indeed surprising to find so noble a river, running through so fine a country, in such a state of neglect. The soil on its banks is of the most fertile nature; iron, marble, slate, and various other productions of superior quality, are also to be found in abundance. Though great capabilities exist for easy intercourse, a perfect stagnation unhappily prevails; and where forests of masts, and the burstling activity of commerce should be witnessed, the scene is desolate, and only varied occasionally by the passage of some straggling boat, which, with difficulty, and perhaps with only half a cargo, is striving to make its way to one of the Dublin Canals.

There is, perhaps, no part of the British dominions where such an opening is presented for prospective advantages.

Capabilities of Improvements.

Mr. Rhodes having, by the very extensive and judiciously-executed plans and sections in explanation of his Reports, described, with great clearness and detail, the present state of the river, proceeds to consider the capabilities for improvement in two points of view: first, as regards the relieving the lands from the extent and lengthened duration of the periodical and occasional floods, to which they are liable; and secondly, combining with the former the still more important object of an efficient navigation.

The general principles on which he proposes to act for the attainment of those two objects, are,

1st, To clear away, to a certain given depth, and for a reasonable width, all the existing shoals, eel-weirs, mill-dams, &c. in order to allow of a free passage to the water.

2d, To reduce the number of locks, by dividing the river into longer reaches, for which the general ample depth of water appears to be favourable.

3d, To maintain, by means of substantially-built dams, of masonry, at each of his proposed falls a depth of water throughout sufficient for the passage of the trading vessels at all times.

4th, In order that these dams may afford a passage adequate to the purpose of preventing the accumulation of the flood waters, he proposes to give them a convex form, by which means space is added for the current to pass over, to the same effect as if the river was increased in width.

The precise points for all these works, the proposed modes of operation, and the reasoning in detail upon each of them, are fully explained in the various documents.

Mr. Rhodes has given a precise account of every bridge on the river, the extent of water-way at each, and the various and important defects that exist in nearly all of them; to which he has added what he considers to be the best remedy in each case.

Taking into consideration the width and depth of the waters of the Shannon, with its numerous lakes, and the difficulty of establishing and maintaining towing-paths, and having witnessed the practical working of the steam-vessels, even in the present imperfect state of the navigation, he is fully persuaded of the peculiar applicability of the power of steam to these waters, and therefore proposes that each new lock should be of sufficient dimensions to admit the class of that description of vessels that he considers adequate to the purpose.

The system hitherto adopted for the works of the river has been that of dealing in detail with each obstruction, whether great or small; every rapid had its canal, with sometimes all the apparatus of a lock, for a fall of one or two feet only. Mr. Rhodes, taking a more enlarged view, has run his levels to greater lengths; reduced the sites for locks to falls worthy of them; and worked up his projects on a plan of uniform simplicity that bears great appearance of sound judgment and ability, though they may still be open to discussion and modification whenever the time shall arrive for their being put into execution.

Some doubts may perhaps be entertained as to the adequacy of the proposed

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dams to enable the superfluous flood-waters to pass off with the rapidity on which he calculates; and whether it might not be desirable, and even necessary, to add extensive sluices, which would not only enlarge, in a great degree, the passage for those waters, but be always available to regulate, in some measure, the discharge. It would appear that there is a difference of opinion amongst the proprietors of the lands subject to inundation regarding the extent of the evil. Many would object to being deprived altogether of the effects of the floods, which they describe as being in some respects beneficial; at the same time, it would be deemed by all parties a great advantage if their duration could be limited, and if they could be altogether prevented during the summer.

Before having recourse to any plan for this purpose, it would be necessary to ascertain, by thorough investigation, how far the lands, under their several different circumstances, might be considered likely to be improved, or otherwise, by the proposed drainage, for every foot taken from the amount of rise of flood would preclude, perhaps, thousands of acres from any inundation at all.

The general application of large locks, as proposed for the admission of steam-vessels, would undoubtedly be very advantageous; but as the smallest of these vessels, to be of sufficient power and efficiency, would require works of dimensions costly, both in first construction and in future maintenance, it might be thought sufficient, perhaps, as a measure of economy, to limit that accommodation to the two proposed locks between Athlone and Portumna. This would open a free passage to the same large class of steamers all the way from Killaloe to Tarmonbarry, a distance of 85 miles, including the two great lakes, where their services are most required. It is a very usual opinion among engineers that side artificial canals are eventually more judicious than the attempt to dredge channels in the beds of the streams themselves, and that, for the purposes of navigation, rivers are only useful to supply canals with water; it may therefore be important, in estimating the propriety of excavating the required depth in the bed of this river, according to the plan now proposed, to take into consideration the nature of the shoals; if they have been created by deposits collected by the action of the current, it may be expected that the same process will continually tend to similar results, and that an effort to preserve the channel would require to be constant and laborious; but if the obstructions have been artificially made, or consist of a natural and solid substratum, it may reasonably be presumed that the openings, once made, will be permanent, or at all events require but little attention to maintain. Appearances would seem to indicate that the shoals in the Shannon come, almost universally, under one of these two latter descriptions.

Some of these impediments bear the character of having been formerly assisted by manual labour, where facilities presented themselves for establishing fords; others, and a most mischievous class, are created by a rough dam and an artificial rapid, across the whole width of the river, for the construction of eel and salmon-weirs; these are to this day established at pleasure, under authority of the proprietors of the banks, and present the greatest difficulties in the way of the navigation.

It is probable that such encroachments are contrary to law, but having been introduced at a remote period, when the Shannon was only serviceable as a drain and a fish-pond, some compensation might reasonably be required for their removal.

An objection may perhaps be made to the reduction of so useful a source of food as is afforded by these fisheries. It is, however, understood that the very extent of means applied to them has tended very much to diminish their productiveness; and should the system on which they are at present conducted be done away with by the projected improvement, it may be hoped that a more reasonable application of less absorbing means might tend, by husbanding in some degree the stock, to establish a supply of fish that will be more constant, and eventually more abundant.

Mill-dams, which form another cause of obstruction, are less frequent than the former. The power obtained for the mills is generally very inefficient, in consequence of a tendency to a rise and backing up of the lower waters. A decided improvement would be effected, in this instance, by the proposed new falls and levels.

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Whether any general system of improvement be undertaken or not, it is very desirable that every practicable measure, by law or otherwise, be adopted without delay, by which further obstructions in the river, whether for eel-weirs, mill-dams, or any other object, may in future be prevented.

Of the streams falling into the Shannon, Mr. Rhodes has examined a few of leading importance, the Suck, the Brusna, the Boyle Waters, and some smaller ones; many others are, however, to be met with that might be made available at no great expense, when the main line shall be efficient, for the purpose of carrying the valuable resource of extended navigation by various branches into the country.

I cannot conclude this Report without strongly expressing my conviction that, whatever modifications (if any) may be deemed advisable in the details of the works proposed by Mr. Rhodes, there can be but one opinion of the zealous industry and judgment he has displayed in his operations, by which he has been enabled to collect so much full information on the present state of the river, and thus to furnish most valuable materials for any further consideration that it may be considered desirable to give to the subject.

The following Maps and Plans accompany these Reports:

A general Map of the Shannon, on a small scale, from Limerick to its source. No. 1.

Course of the Shannon, showing the depth of water, proposed Works, &c. from Killaloe to Lough Allen, in six parts, from No. 2 to No. 7. (No. 1, comprehending from Limerick to Killaloe, was transmitted with the First Report*). No. 2. to 7.

Longitudinal Section of the Shannon, from Portumna to Lough Allen. No. 8.

Map of the River Suck. No. 9.

Section of the Suck and Boyle Water. No. 10.

Portfolio, containing 32 large detailed Plans of specific objects. Nos. 11 to 42.

I have the honour to be, &c.

J. F. Burgoyne.

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* *See* Plan to First Report, 11 Aug. 1832, (731.)

II.

REPORTS OF MR. RHODES, 1832.

No. I.

THIRD REPORT upon the Present State of the River *Shannon*, and its Navigation, showing the Means of Improvement; also of reducing the Flood Waters near to the ordinary Summer Level, to facilitate the Drainage of the Lands and Bogs in its vicinity.

(1.) River Shannon Navigation.

Having completed the Examination and Survey of that portion of the River Shannon, &c. from Limerick to Killaloe, a distance of 15 miles, which is described by a Map and detailed Drawing, and accompanied by Reports, dated 28th February and 14th April 1832. Subsequent to that period, I have had frequent opportunities of witnessing the state of the river to low summer water, and from the results of numerous observations and experiments, I am enabled to confirm what I therein stated.

In pursuance of my instructions for investigating the upper part of the Shannon, and with a view of devoting as much time to the service as possible, and as a considerable portion of the time must necessarily be spent in travelling to and from the various inns and lodging-houses, detained by bad weather, &c., it was deemed advisable to procure a canal vessel, or flat-bottomed boat, which was fitted up with the necessary accommodation for myself, assistants and boatmen for living on board, writing and drawing, and containing the surveying instruments, &c. &c. By this means we were enabled to perform the various operations more within ourselves, being always upon the spot, and ready for duty; and I now feel, from experience, that the result has proved all that could have been desired, being convinced that, without some such provision, near double the time would have been occupied in gaining the various information embodied

(1.) River Shannon Navigation.

embodied in this Report, Maps and Drawings; besides which, from the gauge adopted in trimming the vessel, I was enabled, in many instances, to detect the very insufficient navigation, shoals and other obstructions, that possibly might have escaped observation without such means had been adopted *.

From Limerick to Killaloe, and from thence to Lough Allen, the River Shannon presents a diversified and magnificent character, interspersed by numerous fine lakes and broad waters; it is in many parts surrounded by scenery of a beautiful description, and the whole forms a navigable line of communication (at present in a very imperfect state) of 143 statute miles, running in a north and southerly direction. In this distance the three great lakes or natural reservoirs are included, viz. Lough Derg, 23 miles; Lough Ree, 17 miles; and Lough Allen, 10 miles; together embracing 50 miles in length, the whole line of which is sufficiently deep for navigable purposes at the lowest summer water.

Nos 11 & 12. The two Charts represent the length, breadth and form of Lough Derg and Lough Ree, with the various bays, islands and creeks, forming a number of fine natural harbours, affording anchorage and shelter to vessels in tempestuous weather, or adverse winds, and the means of shipping off the produce of the country. The observations I have been enabled to make on these lakes for the improvement of the navigation and drainage are described by red lines on the Charts, and treated of in the detailed parts of this Report. I am not in possession of a chart of Lough Allen, nor am I aware of it ever having been accurately surveyed. It presents an extensive sheet of water, surrounded by lofty mountains, richly stored with minerals, coal and iron, and the sides of which are in a forward state of cultivation. The narrow parts, or what may be more properly called the river, is divided into three sections; viz.

See Section of Locks, No. 16. The first section commences at the tide-way at Limerick, and terminates at the south end of Lough Derg, a distance of 15 miles. The rise from ordinary spring-tides, high water, to the *surface* of Lough Derg is 83 feet 8 inches, and the navigable communication is effected partly by the river, and partly by lateral canals, and 11 locks of various lifts.

See General Maps, Nos. 2, 3, 4. The second section commences at Portumna, the north end of Lough Derg, and terminating at the south end of Lough Ree; the distance is 36 miles, forming a fine wide and capacious channel, averaging 500 feet in breadth, the whole generally of sufficient depth for the navigation of the largest class of steam-vessels and the drainage purposes at low summer water, with the exception of the following shoals: viz.

At Derry Island, White's Ford, Meelick, Counsellor's Ford, Banagher, Leahinch, Derryholmes, Bishop's Islands, Garrymore, Shannon Bridge, Clirhaun, Ballynatave, Tullymore, Rann Island, and at Athlone.

These shoals are comparatively of small extent, and nearly all of them are composed of the same material as the other parts of the bed of the river, forming natural ridges of mountain clay, limestone, gravel and detached stones, stretching quite across the river course, in addition to which eel-weirs are constructed. These impediments dam up the water, inundate the lands to a ruinous extent, and obstruct the navigation. A particular examination was made of *See* detailed Drawings, Nos. 18 to 29. these parts, which are described by the detailed Drawings, with numerous soundings marked thereon, showing the depth of water, &c. &c., and will be treated of separately.

The river banks are in general low, and the callows, (or low lands) which are of a rich calcareous nature, appear formed by the residuum of decomposed organic and other matter, transported by the water from the more elevated parts of the country. The whole of the surface is inundated in winter for a great length of time, and in summer producing large crops of rank coarse grass, and affording pasturage for cattle and horses; they are of great extent, as also the bogs verging on them.

The rise from the surface of Lough Derg to Lough Ree is 13 feet 10 inches, and is rendered navigable by short lateral cuts, to avoid the falls, with four locks of various lifts. (*See* Section.)

See separate Report. This part of the river was transferred, by agreement, from the Directors-general of Inland Navigation to the Grand Canal Company in 1806, under condition of keeping it in proper repair, with a specified depth of water at all seasons, &c., but it does not appear that they have fulfilled the engagements then entered into.

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* Having concluded the investigation, the vessel has, I believe, been transmitted to the naval branch of the Great Survey of Ireland, and I have no doubt will be found useful for the various operations connected with that department.

See General Map, Nos. 5, 6 & 7.

The *third section* commences at Lanesborough, or north end of Lough Ree, and terminates near Drumshambo, the south end of Lake Allen, forming a distance of 46 miles, and continues nearly the same capacious breadth as the lower part, averaging 450 feet wide to Hartley, (within seven miles of Lough Allen); from thence to Battle Bridge it is contracted to 140 feet. Its general depth throughout this section is sufficient for the navigation and drainage purposes at the low summer water, with the exception of the following shoals, which will also be seen by the General Section; viz.

At Curreen Point, Lanesborough, Kilnacurragh, Erragh, Cloonbeila, Knappogue, Tarmonbarry, Lough Forbes, Clooneencox, Clooneenkennedy, Cloonfad, Bird Island, Ruskey, Derrycarney, Jamestown, Doyles Island, Curnacurra, Carrick Bridge, Port, Battle Bridge, Drumturriff, and the entrance to Lough Allen.

These shoals are similar to those below Athlone, of small extent, and are composed of mountain clay, gravel and detached stones, with eel-weirs constructed thereon, which dam up the water, inundate the lands, and form great obstructions to the navigation. A particular examination was also made of these parts, which are described by the detailed Drawings, and will be treated of separately in this Report.

At Battle Bridge the navigation by the river terminates, and it is continued by a canal from this point to Lough Allen, a distance of nearly five miles.

The banks of the river from Lanesborough to Ruskey are also very low, with extensive tracts of callow and bog, which are inundated in winter for a considerable period. In the vicinity of Ruskey the great bog district begins to disappear, and the general character of the country around is more undulating and hilly as we advance to the mountainous parts, Sliebh-an-Teerin on the east, and the Sligo mountains on the west sides of Lough Allen.

The rise from the surface of Lough Ree to Lough Allen is 41 feet 1 inch, which is rendered navigable at the falls by short cuts and canals, &c., and six locks of various rises, the particulars of which are shown on the Section of the Locks.

This last section, from Lough Ree to Lough Allen, is now in the possession of Government, and, similar to the other parts on the Lower Shannon, is greatly neglected.

The total rise from high water at Limerick to the surface of summer water in Lough Allen is 143 feet 7 inches, which will more plainly appear by an inspection of the General Section, and also of the detailed Drawing of the Locks. No. 8.

The form and course of the river part, including the smaller lakes, is described by a General Map, constructed expressly for this purpose, to a scale of six inches to a mile. The first section, from Limerick to Killaloe, has been already examined, and the Report, &c. delivered; and from this latter point to Lough Allen the Map is divided into six parts (for the purpose of making it portable and convenient to examine any part at the time), on each of which is delineated by a red dotted line the sailing course of the river and lakes, which was carefully examined throughout, by taking the soundings at very short distances, the deep parts with a lead and line, divided into feet and half feet, and under 10 feet in depth was generally taken by a rod graduated into feet and inches. A considerable number of the soundings are introduced, showing the depth of water on the sailing course* (which are marked on the Table of Soundings by crosses) reduced to the minimum state, and are extracted from an extensive Table of Soundings, prepared from actual admeasurements, and any intermediate depth besides those marked on the Maps can be seen by an inspection of the Table. No. 1. See Table of Soundings.

At the shoals already enumerated, and where any obstruction or contraction of the river takes place to prevent the free navigation and drainage, the verge of the river course is tinted red, and a short explanatory note is prefixed, describing the general character of that particular part.

A line

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* The Crosses by the sides of the columns of figures, in the Table of Soundings, denote the depths which are put upon the general maps. The Black Lines describe the extent of the soundings, opposite each shoal, island, &c.

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A line is also delineated upon the Map for the purpose of giving an idea of the great extent of the inundation in winter, and the situation of the bogs verging on the river course is also described.

See Elevation of Bridges, No. 14.

The situation of the public bridges, amounting to 20 in number, are shown, and many of them form great obstructions to the winter floods by being originally built too small in dimensions, and in several instances contracted by encroachments. Admeasurements of the capacity of the water-way were taken of each, which is particularly represented on the detailed Drawing by an elevation of each bridge, the dimensions of the arches, &c., and a comparative scale of capacities, and will be adverted to in treating of the separate parts.

See General Section, No. 8.

For the two portions of the river, viz. from Lough Derg to Lough Ree and from Lough Ree to Lough Allen, a General Section has been prepared on the same scale as the General Maps, 6 inches to the mile, the vertical dimensions to a scale of 1 inch equal to 10 feet.

See Register of Locks.

On the Sections are represented the maximum and minimum state of the water in the river during the winter and summer months, particulars of which were obtained by fixing gauges at the various stations. These gauges were graduated into feet and inches from the surface of the upper and lower sills, and observations made by the lock-keepers twice a day for the period of 12 months, and the rise and fall of the waters were daily registered; from these documents the accompanying Table has been prepared, and they are the data (of the height of the water) upon which the general Section is constructed.

Each mile on the Section is divided into 10 parts of 8 chains each, excepting some of the shallow parts, where they are nearer together, and described by a vertical line, with the depth of water marked in feet and inches, taken from the Maps and Table of Soundings, where each can be found by a slight inspection, and may be compared to the intermediate depths (in the Table.)

The several shoals, eel-weirs, and the obstructions at the public bridges forming impediments to the navigation and drainage, are represented by red colour, showing the required deepening.

On the general and detailed Sections are shown the number, length, breadth and rise of each lock throughout the line, also is described the depth of the low summer water, and the height or rise of the winter floods, taken from the lock-sills. It will also be seen the difference of level which exists at almost every reach from the upper sill of one lock to the lower sill of the next, (and *vice versâ*) which should be exactly the same; thus, for example, the lower sill of Hamilton's Lock is 2 feet 9 inches above the upper sill of Killaloe Lock.

As the General Map and Sections are of too small a scale to elucidate and explain the different existing impediments to the navigation and drainage sufficiently, a number of detailed Drawings have been prepared on a much larger, but convenient scale; each part is particularly described by a plan, longitudinal and transverse sections of the present state of the works; they also show the alterations necessary to improve and make them efficient.

Description of the Shannon.

Taking a view of this majestic river, its lakes and lateral branches, which receive the drainage of a considerable portion of Ireland, they also appear as if formed and designed by *nature* as the great arteries of the kingdom for facilitating its agricultural and commercial purposes, by marking out a splendid line of intercourse for an expeditious and cheap mode of conveyance (through a a populous country) superior to any in the empire, and only requires a little assistance from *art* to render it beneficially useful to an unlimited extent; but her grand designs have hitherto been in a great measure frustrated, and may not improperly be compared to a "sealed book."

Obstructions.

This is caused by a few natural, but the greater part are artificial obstructions, which dam up the water, and inundate the country to a formidable extent; this renders the navigation very imperfect, by the great accumulation and expanse of its waters in winter, few beacons to mark out the course, and the detention by adverse winds, unless aided by steam power. In summer time, the water is too shallow at several parts for a laden vessel, or even with a moderate draft of water to get over them, so that taking it all together it almost amounts to a prohibition of any trade being carried on with certainty, (at present being very limited,) which is to be regretted, as it tends greatly to retard any general or permanent improvement taking place throughout this great extent of of fine country, fertile and abundant in its agricultural and mineral productions. The chief impediments are as follow: viz.

1st, A contracted and shallow canal navigation to avoid the falls, which appears constructed as if no general system had been kept in view with regard to the scale of sections, length and breadth of locks, the level of sills, and the dimensions of accommodation bridges, &c.

2d, The numerous shoals and eel-weirs that exist between the locks and at the several bridges, with the imperfect navigable channels at the shoals not being dredged to any regular form and depth, with an insufficient number of beacons to mark out the channel. This has been the cause of great complaint, and it appears well founded.

3d, The improper construction of the piers of the several bridges, being in many places erected upon artificial foundations. The contraction of the arches or section of waterway, with the construction of eel-weirs at most of the bridges, which choke up the river course, forming a considerable head of water, and being a principal cause of the inundation.

4th, The construction of mill-dams to an improper height, in some instances occupying the whole of the river course with mill-sluices, &c., as at Jamestown; erecting the mills in the archways of the bridges, as at Banagher and Athlone; with various other encroachments, which appear to have been done with impunity, though it is difficult to be conceived how they could have been permitted.

5th, Constructing canals and locks, where not required, as at Banagher, Shannon Bridge, and at Lanesborough, the expense of their erection being sufficient to have cleared away the shoals situated adjacent, and also for the erection of proper weirs, to retain the water to a sufficient height in summer, and to allow it to escape during the winter floods.

In consequence of these numerous obstructions, many of which have existed since the commencement of the works, and others having been formed since that period, would make it appear to have been the chief cause of retarding the trading intercourse upon the Shannon, which may be said to be now only in its infancy.

The removal of the shoals, &c. and making the navigation more perfect, with the drainage of the lands, would tend to increase the trade infinitely, both as to its agricultural and mineral, as well as foreign productions, viz. timber, iron, coal, slate, and general merchandize, and would form an easy conveyance for passengers to the several towns situated on its banks; it would also increase the trade on the canals, viz. Royal Canal, Grand Canal, and Limerick Navigation.

By this means also the tributary rivers entering the Shannon would be rendered capable of becoming permanent and serviceable lines of intercourse; of these there are several along the main line; viz.

Scariff, Woodford, Ballyshrule and the Lower Brusna, from Meelick to Parsonstown, all of which are upon the same level as Lough Derg. These several rivers have been examined, and at a comparatively small expense may be made navigable. Also the river Suck, from Shannon Bridge to Ballinasloe and Ballyforan, a distance of 25 miles, now in a most ruinous state; the Camado river, and the river Inny in Lough Ree, and the Boyle water from the Shannon, near Carrick, to Lough Key and the town of Boyle, Lough Gara and Lough Arrow, the scenery of which is very beautiful, and the soil rich and productive. These several lines of communication would open out a great district of country, whose resources are at present in a manner locked up. In the examination of the river and its branches, a great number of sites present themselves, with excellent falls of water, suitable for the erection of corn-mills, and for the manufacturing of linen and woollen cloth, for bleaching, distilleries, &c.; but owing to the great and sudden rise of the waters, this power, which is equal to some thousand horses, cannot be brought into action. Here then is a source pregnant with wealth, extending its ramifications in all directions, but which at present lies dormant, and must remain so until a better regulation in the discharge of the water takes place.

Advantages of removing the Obstructions.

Looking at the great extent to which this country is inundated, and for the greater portion of the year, it appears rather astonishing that it should have been allowed to remain so long in this state, when its baneful influence to the cultivation of the lands, reclaiming the bogs, and the salubrity of the country

(1.) River Shannon Navigation.

are considered, offering as it does a wide field for improvement, which, if commenced and prosecuted, would give permanent relief and useful employment to thousands of its inhabitants (in various pursuits) now in a state absolutely wanting the necessaries of life, and driven to desperation.

On the great line in the vicinity of the Shannon the climate is naturally very humid, which is no doubt in a measure caused by the sluggish velocity of the river, the exhalations from the great surface of the water, and the great extent of the bogs, which are permanently saturated with moisture, and is rendered unwholesome for want of a proper discharge. Thus it would appear that irrigation is not so necessary for the production of vegetation (along the Shannon) when the atmosphere is so constantly surcharged with humidity; but should it be found necessary, the different weirs would offer the best facility for fixing wasteboards or sluices, which could be effected at pleasure.

Having maturely considered these several important matters, I am of opinion, that for carrying these projected improvements into effect, it is essentially necessary that a reduction and a regulation of the immense occasional accumulation of waters take place, and a proper system of drainage be established throughout the entire line; and as it would also materially improve the navigation, it seems advisable that the two beneficial and grand objects should be prosecuted in conjunction, as their execution would be less expensive than if done separately.

With this view I have described on the General Map and Sections (by red lines) the proposed locks, with the depth and rise of each, and also the situation of the weirs at the different falls, for the due discharge and to regulate the water to a defined height; and it will also be seen on inspection of the detailed Drawings, described by the Cross Sections, &c., the present inefficient depth of water in the canals during the summer season, compared with the dimensions described and decided upon by the Directors-general and the Grand Canal Company, in forming the canals from Portumna to Athlone, and which they ought by their agreement to have made and kept to this scale.

This size of canal is sufficiently large to the extent that was then contemplated; but circumstances, now requiring the aid of *steam power* to be used, which at that time was not rendered applicable for general purposes, it follows that an increase of dimensions must be adopted in the main line of canals connected with the River Shannon, and this has been attended to in the projected improvements described in this Report, and shown upon the various Sections.

Peculiarity of Navigation.

From the peculiar form, devious course and nature of the great line of the Shannon navigation, its lakes and broad waters, little headway can be gained by sailing, except with a fair wind, and when the course is nearly direct. And many of the parts being deep towards the sides, and others of a shallow nature, covered with reeds, rushes and grass, to such a great extent, that any ordinary length of towing-line for tracking the boats would be found insufficient; therefore towing in a great many parts, particularly in time of floods, is impracticable; recourse must be had then to long sweeps for rowing, pushing along with sett poles, or towing with a small boat a-head; and as these several methods are very slow and tardy, even in calm weather, but with adverse winds, and prevailing as they do from the west a great portion of the year, detains vessels bound from the Upper Shannon to Dublin and Limerick many weeks on their voyage, which makes it expensive, and in some cases (from the nature of the cargo) this detention proves a loss both to the merchant and owner of the vessel.

Steam-boats.

Therefore, to carry on a regular trade with certainty and dispatch, steam power appears indispensable; and to apply this power to advantage would require boats and machinery of such increased size, that the present locks and side canals would be of too small dimensions.

See Plan of Proposed Lock, No. 17.

The size of the locks suitable for this purpose should be at least 130 feet in length, 30 feet wide in the clear, and six feet depth of water over the sills in the driest season; the short lateral canals to be of corresponding magnitude. These dimensions are sufficiently large for a vessel with engines of from 60 to 70-horse power, which, if built with a light draft of water, say three feet six inches, affording good room and accommodation for passengers, would answer extremely well for the River Shannon. The small steam-boats made for passing the present locks are of too diminutive a scale, confined and unsuitable for a general trade.

And it is submitted, that at a comparative small expense, carried on with the necessary works for the drainage, this superior line of intercourse for steam and other vessels may be extended from the south end of Lough Derg, through Lough Ree, and to the town of Leitrim near Lough Allen; also up the Boyle Water, Lough Key, and to the town of Boyle, the passage of which might be performed from any of these places to Killaloe in one day (a great difference to the present uncertain time, sometimes occupying a month or six weeks.)

The River Suck would also form another course for steam-vessels (when improved) from Shannon Bridge to Ballinasloe and Ballyforan, and for taking boats in tow from the various branches.

Besides expediting commerce, it would form a better communication for dispatching military equipments and stores from the different establishments, also a cheaper and expeditious conveyance for light goods, passengers and tourists visiting the lakes, &c. &c.

On Levels and Falls.

In addition to the foregoing description of the River Shannon, and to which the General Maps and Sections are applicable, I beg, previous to detailing the state of the works and obstructions, with what is required to render it perfectly navigable, to offer a few general observations as to the reduction of the levels, and a proper division of the falls, for the advantage of draining the low lands and bogs in an effectual manner.

For rendering a river navigable it is frequently found necessary, as on the Shannon, to construct, of durable materials, capacious weirs at the different falls for the purpose of preserving the level, and to keep the water at, or near, one uniform defined height over the lock-sills, and what is not required for the lockage and side canals is allowed to escape over the weir, to free the upper lands from inundation.

See detailed Drawing of Weirs.

On the Shannon it appears these matters have not been attended to, there not being a single erection of this kind at any of the falls throughout the line, which is one of the principal causes of its imperfect navigation and drainage; with a view to its improvement it is proposed to construct one at each of the following falls, as described on the General Map and Section; viz. Castle Connell, Killaloe, Meelick, Athlone, Tarmonbarry, Ruskey, Jamestown, Battle Bridge, Drumleague, and at the entrance of Lough Allen.

These weirs to be constructed of solid masonry, in length and height according to calculation, found necessary to retain water sufficient in summer, and in winter to allow it to discharge freely, not producing more head than one foot six inches, or two feet, or, if found of advantage, folding-down wasteboards may be kept to regulate the same. Thus, when fixed upon by some legislative enactment, they would always remain defined gauges, and be the means of preventing future encroachments.

The distribution of the falls is as follows, which will more plainly appear by an inspection of the Longitudinal Section of the whole line:

1st, Lowering Lough Derg, as proposed, (*see* First Report) by means of the weir or dam at Killaloe, nine feet, preserving six feet water on the upper lock-sill will relieve the lands and bogs situated upon its shores; and the same level extending from Portumna to Meelick will afford sufficient drainage to the lands and bogs on each side. The same along the Scariff, Woodford, Ballyshrule, and the Lower Brusna Rivers.

2d, At Meelick the present fall is seven feet one inch, and by the proposed alteration, of always preserving six feet water on the upper sill of Hamilton's Lock, would make the fall nine feet six inches, which would render it one of the most important situated upon the Shannon for water power. This level to be continued to Athlone, by the removal of the locks at Banagher and Shannon Bridge. A new line of canal is proposed at this part, on an enlarged scale.

3d, At Athlone the present fall is four feet; by extending the new line of levels from Meelick will increase it to six feet five inches, which will enhance the value of the mill power considerably. In rebuilding the lock and enlarging the canal, it is proposed to reduce the surface of Lough Ree to the present low summer water, which is about seven feet from surface of winter floods, and to extend the same level to Tarmonbarry by the removal of Lanesborough Lock, which will afford the necessary relief and drainage to the low lands and bogs situated on its shores, and along the course of the river.

4th, At Tarmonbarry the *entire* fall is seven feet three inches, and by the removal of Lanesborough Lock and the shoal at Lodge Cut, &c. will increase it to eight feet four inches, which will enhance its value considerably as regards mill power. A new line of communication is proposed at this part with lock and weir, keeping to the main line of the river, which will shorten the distance nearly two miles; this level to be continued through Lough Forbes (and kept at the summer water) to Ruskey, by the removal of the shoals of Clooneencox, Clooneenkennedy, Cloonfad and Bird Island.

5th, At Ruskey the fall is three feet; by the removal of the intermediate shoals to Tarmonbarry will increase it to three feet five inches. The lock requires rebuilding, to suit the proper levels, and to obtain sufficient water on the lock-sills, enlarge the canal to the proper scale, and construct a weir, &c. &c. to regulate and keep the waters of Lough Boeffinn and Boedarrigg at the summer level.

6th, At Jamestown Canal Lock the fall is six feet four inches. The alterations required here are to rebuild the lock, to afford sufficient water over the sills, enlarge the section of the canal to the proper scale, with bridges, &c., and to reconstruct the mill-dam at Jamestown, for the purpose of allowing the necessary discharge in winter, and retain the surface of water at the summer level, which will extend to Battle Bridge and along the Boyle Water.

7th, At Battle Bridge the navigable communication by the river terminates, and it branches by a canal to Lough Allen; the rise of the lock is 10 feet; the canal is too contracted in dimensions, and requires deepening, and the sill of lock altering, to afford six feet water.

8th, At Drumleague the rise of the lock is 11 feet six inches; five feet water was found upon the upper sill, and it is proposed to rise Lough Allen 12 inches, by means of a weir, to be constructed at a little above Ballytra Bridge.

Proposed Improvements.

Having given the levels and heights of the different falls throughout this extensive line, I shall now proceed to enter more into detail, showing the present state of the works, with the alterations I consider necessary for the improvement of the navigation and drainage of the Shannon waters.

Lough Derg.

In the examination of the several bays and natural harbours of Lough Derg a number of beacons require erecting, to mark out the dangerous sunk rocks and shoals. The parts that require particular attention are described upon the Chart, and coloured red. There are already some few buoys placed by the Steam Navigation Company, but being small, cannot be distinguished in rough weather. Substantial stone beacons, erected upon the shoal parts, would be found the best, and the least expensive, besides always remaining a permanent mark.

Portumna.

The river from Lough Derg to Meelick, a distance of nine miles, presents a fine open channel, from 500 to 600 feet broad, reduced almost to a tranquil state, and upon the same level as Lough Derg; its greatest depth is 50 feet, but the more numerous parts are from 25 to 30 feet; the only shallow parts in this distance are at Derry Island and White's Ford.

Derry Island.

The shoal or bar at Derry Island stretches quite across the channel, of considerable breadth, and consisting of large loose stones, gravel and clay, and appears to have been washed up by the surf in gales, acting against the current at low-water. By the soundings, the depth of water was found across at the top of the ridge to be seven feet, which is six inches above the level of Killaloe Lock sill. For the safety of navigating vessels, this part would require a channel to be dredged from three to four feet deeper, to prevent vessels from striking in tempestuous weather, and to be marked out by two substantial stone beacons, placed about 400 feet apart, furnished with good ring bolts for the convenience of mooring.

White's

White's Ford.

WHITE'S FORD is situated about half-way between Portumna and Meelick; the river at this place is rather contracted and shallow, the deepest sounding in the transverse section was found by comparing the levels to be six inches above the upper sill of Killaloe Lock. To facilitate the proper discharge of the water, the section requires two feet three inches deepening for about 100 yards in length, and the same in width; it is composed of gravel and clay, and being of small extent, may be easily accomplished.

The only bridge in this district is at Portumna, which is constructed of timber, with retaining walls and arches, with an opening of 40 feet, (for the admission of steam and sailing vessels,) or Bascule Bridge. This structure is in a very dilapidated state, and quite unsafe.

In this district the general surface of the callows, above the lowest summer water observed this year, would average three feet six inches, and by the proposed reduction one foot six inches in addition, making it five feet. In some places it would be considerably more, and in others something less. Therefore calculating that the waters would never rise more than two feet six inches, or three feet in an extraordinary flood, on the weir at Killaloe, would leave the lands sufficiently elevated for cultivation.

See separate Report, printed 11 August 1832, (731)—and Drawing No. 11, 14 April 1832.

The banks in this state would afford a good towing-path, and the water being of considerable depth near the sides, would facilitate the passage of the trading vessels, now frequently obliged to remain at their moorings several weeks, during the prevalence of contrary winds, and would materially assist the different traders not having the means of employing steam-power.

The bogs in this vicinity are very extensive; viz. Cappaseal, Derryhavney, Tinnaseragh, Redwood, &c. the whole of which are capable of being completely drained to their bottom, having a sufficient fall for discharging the water into the river. Their general surface is from 20 to 25 and 30 feet in height above the Shannon, rounding a little at the top towards the centre; they are very wet, by the rain lodging and having no vent to escape, also by the absorption of the water from the Shannon, at the time of floods, and being of the nature of sponge, a considerable quantity of this moisture is held from the time the water begins to subside to the summer level until the floods return, which is generally from five to six months in the year; therefore until proper and effective drains are made through them in various directions, little or nothing can be done towards reclaiming, and which would appear a desirable object, as they might be brought into cultivation, and made equal to any estates in the kingdom in a short time, and at little expense, and this would add salubrity to the climate. The same remarks apply to all the other bogs situated upon the Shannon.

Meelick and Killogue.

AT Meelick and Killogue the fall is divided, the first being two feet four inches, and the latter or upper one four feet nine inches, making the total fall seven feet one inch. It consists of a natural ridge of limestone gravel, very compact. The main passage is nearly choked up with eel and salmon-weirs, mill-dams, (for the use of only one mill,) of little or no value in their present state, detached pieces of rock, and a number of small islands of limestone gravel, forming altogether a series of intricate shallow passages.

See General Map, No. 2, and detailed Drawing, No. 18.

About half-way up the fall of Killogue is situated a small corn-mill, but from its being so disadvantageously placed, it can do but little work, and this only at one portion of the year.

Above this part, (as shown on the plan and section,) the river is much contracted and very shallow, forming a ford in summer for the country people to cross.

There are also two batteries erected to command this passage. By an inspection of the General Maps, the river is of sufficient capacity for discharging the flood waters, and for the navigation. The numerous branches of the river, forming the islands of Muchinish, Innishirekigh and others, would be relieved and almost drained by opening the channel at Meelick. In winter these islands are almost completely inundated, and form a very intricate and dangerous navigation, and none but those well practised could possibly discover the course; the waters of Lough Derg backing up to this place, and the Lower

Brusna entering the Shannon below the falls, forms a wide expanse of waters, and a scene of desolation.

This fall forms a very important feature, and is similar to the one at Killaloe, requiring almost the same mode of treatment for discharging the flood waters, and of retaining a sufficiency for the navigation.

For the purpose of giving the water a free vent, and reducing it from the flooded state to summer level, I propose widening and deepening the west channel a little above Killogue-mill, to double its sectional area, to clear the several mill-dams, salmon and eel-weirs, detached pieces of rock, and every other impediment, and making the channel even and regular, from Killogue to Meelick, reducing the falls of the latter to proposed summer water of Lough Derg; to construct a weir of solid masonry, in position and form as represented on the Map and detailed Drawing, which appears of sufficient capacity for discharging the greatest flood waters, with a head of one foot six inches only, the top of the weir to be of such height as will regulate and retain in the dryest seasons six feet head upon the upper gates of Hamilton's Lock.

When the reduction of Lough Derg is taken into calculation, as proposed, there will then be a fall of nine feet six inches, which will render it the most valuable fall upon the Shannon, from its peculiar situation, for commanding mill power, there being at all times a sufficient and inexhaustible supply of water for the above purposes, as well as for the supply of the navigation.

On the same plan is represented the proposed short canal, leading up to the main channel of the river, there being a sufficient depth of water for the larger class of vessels, and which, it is submitted, would form a much better and more direct line of communication than by the Cloonaheenogue Canal; however, these suggested improvements would not affect this navigation, only for the better, as it would always ensure six feet water on the upper sill in the dryest seasons, and in winter keep the water down to nearly an uniform height.

By comparing the levels (from the Table and Register) it will be seen that the lower gate sill of Hamilton's Lock is two feet nine inches above the upper sill of Killaloe Lock, which in summer is found too shallow for laden boats to pass, and frequently there is only four feet six inches water. To reduce this sill to its proper level would require the reconstruction of the lock; and the whole length of the canal requires deepening, particularly at the bridges. The depth of water as compared with the gate-sills, taken in the centre of the canal, are shown upon the Map and detailed Drawing.

See Soundings, Columns 13, 14, 15 & 16.

A separate Report has been made as to the state of this navigation from Portumna to Athlone, (now in the hands of the Grand Canal Company,) for which, see particulars.

From Meelick to Athlone, a distance of 27 miles, it is proposed to reduce the surface of the river to one level, by the removal of the locks at Banagher and Shannon Bridge, and the various intermediate shoals, which are described upon the General Section and detailed Drawings; viz. Shannon Grove, Banagher, Wooden Bridge at Shannon Harbour, Leahinch, Derryholmes, Bishop's Islands, Garrymore, Shannon Bridge, Clirhaun, Ballynatave, Tullamore and Rann Island. The whole of these shoals chiefly consist of the same materials, and present no difficulty whatever in their removal.

Shannon Grove, or Counsellor's Ford.

Detailed Drawing, No. 19.

The section of the river at this part is nearly choked up with salmon and eel-weirs, formed of stones, stakes and wattled work, which extend nearly across the channel; they appear in an useless state, and the whole requires clearing away, as described by the sections. The present navigable channel also requires deepening in several parts to an uniform surface, and forming into a better line.

A shoal, or projection of the river, presents itself on the east side of the river, nearly opposite Banagher Lock, which requires taking off to the proper depth, as also the removal of the stone beacon, which would add to the improvement of the line of navigation.

Banagher.

Detailed Drawing, No. 20.

Banagher bridge is built of rubble masonry, of rude workmanship; it comprises 17 arches of various dimensions, the piers of which occupy nearly one half of the entire width of the river. The clear water-way is 295 feet, and the piers 244 feet. The whole structure appears in a very decayed state, particularly the part belonging to the county Galway, (a portion of one of the piers and parapet fell the time I was examining it.) For a protection to the foundation and piers, a pavement of masonry has been introduced under the arches, which acts as a weir to dam up the water. The length of the canal, lock, bridge, &c. are fully represented on the drawings, with the soundings, &c.

The head of water formed at this part is two feet two inches in the winter, and one foot nine inches in summer. A flour mill has been erected on the east side of the river, of considerable size, but the fall of water being so very small, it is rendered useless a great portion of the summer season, for want of a sufficient fall of water, and the proprietor informed me that he was going to erect a steam-engine to assist in propelling the machinery.

This mill, and its various erections, occupy the space of five arches of the bridge, and these, with the dam, walls, &c. amount to upwards of 90 feet of the clear water-way. Above the bridge a shoal of gravel is formed quite across the river, which has only a few inches water on it in the dry seasons. This shoal has the appearance of being made to pen up the water for the use of the mill.

Below the bridge there are eel-weirs constructed, which extend across the river, of close wattled work, large stones and gravel; and a little further down a number of small islands and detached pieces of rock present themselves. These various obstructions are the cause of the head of water forming at this part, and being assisted by similar contracted parts at the falls of Meelick, their destructive consequences in inundating the lands and bog extend to Athlone, spreading over an immense extent of country; also it extends its influence up the River Suck, to above Ballinasloe. The whole, taken at a fair computation, is equal to a space of 50 square miles.

For the discharge of this great expanse of water, I propose erecting a new bridge at Banagher in lieu of the old one, the arches and piers to be constructed of such capacity and lightness, combined with strength, as to allow of sufficient space for the free discharge of the winter floods, without forming a head that would be detrimental to the navigation; it would also form a better line of intercourse between the two provinces.

See Drawing of proposed Bridges, No. 15.

The most appropriate site for this erection appears a little above the old bridge, which would be almost in a direct line with the main street of Banagher and the line of road on the opposite side. After the completion of the new bridge, the old one and its approaches to be cleared away, with the various shoals, eel-weirs, mill-dams, &c. and reducing the bed of the river, according to the Plan and Sections.

By reducing the water to a level (above and below bridge,) it would render the mill useless; still there would be no necessity for taking the building down, when it appears to be the intention of the proprietor to work the machinery by steam, there being sufficient space for the water to flow through the old wheel races.

The present lock and gates being quite unnecessary would require removing and the whole clearing away, and the section of the canal increased both in width and depth, (*see* Plan and Section,) to suit the proposed improvements; also to construct abutments, and erect a substantial swivel-bridge, 35 feet span, with approaches to the new bridge, forming a good line of communication.

About 300 yards above the entrance of the canal the channel would require a little deepening, and forming into a more direct line of communication than at present with the necessary beacons constructed to mark out the course.

Wooden Bridge at Shannon Harbour.

All that appears required at this bridge is to enlarge the present opening, which is 18 feet, to 35 feet wide, by the addition of another leaf for opening and shutting, to suit the proposed line of communication.

Leahinch.

This shoal is of small extent, and its removal would be attended with but little expense. It is composed of gravel and clay, with a row of eel-weirs of wattled work, and stones, which stretch nearly across the river, leaving only

Detailed Drawing, No. 21.

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a small opening on the west side in width scarcely sufficient for the passage of a boat, and in summer time the depth of water is insufficient.

Derryholmes.

See detailed Drawing, No. 22.

This shoal consists of a ridge of limestone, gravel and clay, with an intermixture of loose pieces of stone, extending quite across the river. The main channel or river course is sufficiently wide, but uniformly shallow, and the navigable channel, which has been dredged purposely, is exceedingly difficult and dangerous to navigate.

This natural barrier appears to have been increased by throwing in all the stones and matter removed out of the sailing course upon the summit, forming a wall across the river, with the notion, it is believed, of throwing the water immediately into the channel, to increase the facility of the navigation; but this in fact adds to the inconvenience, by creating a great current in a very crooked channel.

To remedy this great inconvenience to the navigation, and for the purposes of the drainage, a channel requires forming, 180 feet in breadth, and six feet six inches in depth, at low summer water, (as marked on the Plan,) carried regular and level on the bottom. The sides to be formed with the materials excavated from the channel, to a slope one and a half to one, and the top banks levelled and trimmed off.

Bishop's Islands.

See detailed Drawing, No. 23.

This is a shoal composed of gravel and detached stones; there is an eel-weir (not now in use) at the upper end, and the remains of one at the lower end. To avoid this shoal, a cut or canal has been made to the westward, (*see* Plan and Section,) through which the water flows at present (July 7th, 1832,) with a velocity of two feet ten inches per second, the water being seven feet in the cut, while at the top of the shoal there is only two feet water. This renders the navigation very difficult, (similar to the one at Parteen Rapid[*],) and shows the necessity of lowering the shoal, both for the purpose of getting rid of this rapid, and also to facilitate the discharge of the great body of water.

It will be seen by an inspection of the general Map and detailed Plan, that the old or east channel is the most direct course for the discharge of the waters of the Shannon, and also for improving the navigation, there being a sufficient depth at the upper and lower ends; and as there are already several branches round the islands for discharging part of the waters, I therefore propose enlarging this old channel to 150 feet wide, and deepening it to six feet six inches low summer water, (calculating for the removal of Banagher Lock,) the bottom to be made level and even, and the side banks to be formed from the excavated part; slopes one and a half to one.

Garrymore.

See detailed Drawing, No. 24.

This shoal, like that at Bishop's Islands, last described, is composed of gravel and stones and clay. The river at this part is rather contracted in width, and the soundings in general are very shallow, many parts grown over with rushes. A very devious and imperfect course has been dredged for the navigable channel, which *was* marked out by two stone beacons; the upper one, (although only erected 12 months ago,) is in a falling state, and the other a complete ruin.

On the upper part of the shoal there is at present only two feet three inches of water. It therefore requires to be lowered for the improvement of the navigation as well as for the drainage. The channel necessary for the proper discharge of the water requires to be the same as for Derryholmes, viz. 180 feet in breadth, and six feet six inches in depth, from the surface of the summer water of the improved level with the bottom, making level and even; side slopes one and a half to one. (*See* Plan and Section.)

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[*] Since writing the Second Report upon this part, the eel-weirs and stones on one side of the river at Parteen Rapid have been cleared away. By this simple operation, and with little cost, it has reduced the head of water, and consequently the current, to nearly a tranquil state. When the other parts are removed, as advised, this once dangerous passage will be rendered safe. This is a proof, which shows how easily the other rapids upon the Shannon may be rendered perfectly navigable and safe.

From Meelick to Shannon Bridge the river is of great breadth and of considerable depth, excepting at the few shoals. The callows are extensive, and situated very low, and the water being kept on them for so long a period, injures them greatly. This shows the necessity of removing the lock at Banagher, with the other alterations at Meelick, to afford the reduction of the water.

In this district the bogs are chiefly situated on the west side of the river. They are very large, extending many miles in length, and along the River Suck, to near Ballinasloe; their breadth is considerable, and the average height may be taken at 20 feet above the Shannon. The verge of these bogs is partially cultivated, to the extent of from three to four chains in width, by drains, made in the first instance (I was informed) by the Bishop of Clonfert, and huts have been built at convenient distances, and the bog allotted out to the peasantry, which shows what may be done by perseverance towards reclaiming them. However, sufficient attention is not paid to keeping the drains open, and the waters of the Shannon rising so high on the bog in winter, produces a desolate and miserable appearance, and renders them unproductive; and during this period the peasantry live in a state of idleness, attended by its concomitant evils.

The works belonging to the Grand Canal Company will not be injured in the least by the removal of the lock at Banagher, as there will be a sufficient depth of water over the sills of Griffith and Fanning locks. (*See* Section.)

Shannon Bridge.

See detailed Drawing, No. 25.

The bridge at this place is of modern construction and well formed; it is built of rubble masonry, the arch-stones, quoins and coping of parapet are of ashlar work. It is composed of 16 semicircular arches, each 21 feet span, piers seven feet thick, and the clear water-way 336 feet. It is founded upon a natural ridge of limestone gravel, which extends across the river. The foundations appear very insecure, being built upon pieces of stone laid in a loose promiscuous manner. Average depth of water flowing through the arches (summer 1832) was 12 inches. Below the bridge the channel is very contracted, (*see* plan) and a number of eel-weirs have been constructed, built of wattled work, stones and gravel, which choke up the river course, forming a head of water of seven inches above the bridge. To avoid this fall, a lock and a short canal have been constructed, with quay, walls, &c.; the upper and lower sills are built too high to give the required depth of water in the summer season (*See* Section.)

Having passed the River Suck, the Shannon may be said to have lost two-fifths of its waters; this consequently renders it easier to contend with, and the capacity of the arches of Shannon Bridge, being so much larger in proportion (according to the quantity of water flowing through them) than the bridges situated below, that any alteration required can be easily accomplished.

For the improvements of the navigation and drainage, I propose removing one side of the lock, (next the river,) with the retaining walls, with the gates, sills, and other matter which forms the island, and clear them entirely away; to deepen the present navigable channel two feet nine inches, to suit the new levels; underpin the east side lock wall, also the wing and quay walls; take down the arch of the canal bridge, and increase the width of the abutments to 35 feet, and erect a swivel-bridge (as already described) to accommodate steamers and masted vessels; remove and clear away all the eel-weirs, and other impediments, and deepen the bed of the river to an uniform level above and below the bridge, also under the whole of the arches; to underpin the piers in a substantial manner, and introduce a pavement between, to protect them from being undermined.

As the eel-weirs are the principal cause of the head of water forming, it appears somewhat extraordinary that a lock and its appendages should have been erected at this place, when so small a difficulty was to be overcome by their removal.

By deepening the archways and bed of the river as proposed, and by the addition of an opening of 35 feet, and clearing away the different obstructions, it will reduce the water above and below bridge nearly to a perfect level.

Clirhaun.

The river at this part is rather contracted and shallow, particularly in the centre part, where a sunk island is formed. The whole consists of gravel and clay. The average deepening required is two feet nine inches, for the distance of 60 yards in length, and to the full width of the river course. On the east side a considerable number of large loose stones are lying, which require collecting, and a wall building of them to slope the sides. Near the west side a large stone makes its appearance under the surface of the water, and is dangerous to vessels approaching it; this also requires clearing away.

Ballynatave.

See detailed Drawing, No. 26.

This shoal is of small extent, forming a ridge of gravel, stones and clay, being about 100 feet in length, with deep water immediately on both sides. Eel-weirs are constructed quite across the river course; they are formed of stone walls, &c. There is also an island in the centre part, formed of a collection of stones. These obstructions together choke up the main passage.

The present sailing course is along the narrow channel branching to the west, which in many parts is rather shallow, and by being dammed up in the main course the greatest quantity of water is forced down this narrow passage, which renders it very difficult at times to get a vessel up it.

The best channel for the navigation would be along the main line of the river, there being a sufficient and much greater depth of water; but owing to the obstructions of the eel-weirs opposite Ballynatave castle, it prevents any vessel from passing, except it be in very high floods, and when they can sail over them.

To improve the navigation and drainage, these eel-weirs and shoal require to be removed, and the parts deepened to the level marked upon the Plan and Section, or six feet six inches below the level of dam at Meelick. The island in the centre may remain, as there is a sufficient space on each side to form a good passage for the navigation, and also for the free discharge of the winter waters. The material excavated would form the banks on each side, or might be deposited in deep water.

Tullamore Ford.

See detailed Drawing, No. 27.

The river at this part spreads out to a great expanse, its breadth being 400 yards; the banks on each side are low, and overgrown at the sides with rushes and grass to a great extent. The shoal is composed of gravel and clay, and the depth of the water is uniformly shallow. A detailed Plan and Section has been prepared, showing the soundings at various parts, and for the improvement of the navigation and drainage a channel requires to be made 150 feet broad and six feet six inches deep from the proposed level of the upper edge of the weir at Meelick. The excavated materials taken from this channel would form the banks on each side, and would be found useful material for reclaiming the bog.

Calf Island.

At the north and south ends of the west passage the water is rather shallow for laden boats during the summer season; therefore requires a little deepening, viz. at the north end 120 feet in length, and 140 feet in breadth; at the south end 300 feet in length, and 180 feet in breadth, and three feet deep. The main channel of the river, which has hitherto never been used for the navigation, appears to have been from error, supposing it shallow. In making the necessary soundings, the depth was found much greater than the other, and a far better line for navigating vessels, (*see* General Section,) being a wide and capacious channel.

Long Island.

The east or main channel is fine and capacious, both with regard to the width and depth. At the shallowest part (summer water) it was found to be eight feet deep, but this only for a very short distance, the general soundings being from 16 to 18 and 20 feet.

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The western branch is rather a more direct course, but has not such a great depth of water, some few places having only four and five feet water, which would require deepening to make it navigable at all times, which by certain winds would be found an advantage to sailing vessels.

Rann Island.

See detailed Drawing, No. 28.

The usual sailing course is on the east side, having a sufficiency of water in the dry seasons. The most direct and preferable course is on the west of the island, but on examination it was found too shallow, which is caused by a number of large stones, and the formation of a shoal of gravel and clay of small extent. A separate Plan and Section have been prepared, showing the depth of water, &c.

It would be a great improvement to the navigation and drainage to deepen the western channel, which would afford the means of towing vessels, it being the best side; and by the winds prevailing from the west, great inconvenience is experienced at this time in getting the vessels round the island and keeping them off the lee-shore, (the same may be said of Calf Island and Long Island); and with respect to the drainage, it would afford a greater facility for discharging the flood waters more uniformly.

From this part to the entrance of the canal at Athlone no obstructions intervene, the river being fine, wide and sufficiently deep.

In the district of country from Shannon Bridge to Athlone, a distance of 12 miles, the callows are of much greater extent, in proportion to distance, than on any other part of the Shannon. They are also situated much lower, and inundated for a longer period, consequently the injury suffered is of the worst description.

This district also presents the largest quantity of bog. On both sides of the river, but particularly on the west side, is one continued line, expanding in breadth over an immense tract of country, being a complete sterile waste. Their general appearance is not quite so elevated as in the vicinity of Banagher and lower down. Numerous patches of the bog along the verge are in a state of cultivation, but the waters inundating and remaining for such a long period on the callows and bog, that at present it offers no inducement to their permanent and beneficial cultivation; and in which state of desolation they must remain until the waters are taken off, and proper drains made through them.

Thus it would appear by the removal of the locks of Banagher and Shannon Bridge and deepening the river course at the various parts enumerated, with the alterations at Meelick for the due regulation of the waters, one great point would be gained towards the general improvement, welfare and civilization of this part of the country.

Athlone.

See detailed Drawing, No. 29.

Separate Plans and Sections have been prepared, showing the situation of the town, river course and the canal, with its inefficient water on the lock-sills.

The canal works, which form the communication with Lough Ree, (now in the hands of the Grand Canal Company,) are about one mile and a half in length, the whole of which are in a very dilapidated and neglected state, and from the banks having slipped in various parts along the entire length, it has become impassable during the summer season for vessels drawing more than from two feet nine inches to three feet water; also the lock gates, bridges, &c. are much out of order. (*See* separate Report of this navigation.)

The bridge across the river is built of rubble masonry. It has ten arches of various sizes, and the water-way, as originally constructed, was 210 feet; but by numerous encroachments at sundry times, four of the arches and a part of the fifth are now occupied by the erection of three corn-mills, leaving only a space of 134 feet for the entire water-way.

This structure appears very insecure, narrow, confined, and in a bad situation; the piers have the appearance of being built upon an artificial foundation, formed by throwing in stones, &c. (for the bed of the river is blue clay and gravel.) These stones may have been thrown in for this purpose, or to raise the head of water for the mills. I understand there have been piles and framework of oak timber to keep this accumulation in its place, but the timbers have

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been long decayed and swept away, and the stones in consequence are washing away from under the piers.

The original parts of the bridge remaining appear to have been built a very long time, and upon one of the parapet walls, over a pier, there is a sculptured tablet of several compartments, bearing the arms of Elizabeth. It also appears that about 70 years ago, five of the centre arches of the bridge fell down, and were rebuilt.

The roadway over the bridge is exceedingly inconvenient, being only 14 feet wide between the parapet walls, and at the ends contracted still more to 12 feet six inches; besides this inconvenience, the approaches on both sides are of the worst imaginable contrivance.

Below the bridge a row of eel-weirs present themselves, constructed of wattled work, stakes, large stones and gravel, with two retaining guide walls, and an island with a garden thereon, the whole forming the tail race for the two mills situated on the east side, also a guide wall for the mill on the west side; the whole of these erections further contract the water-way to 126 feet, which will more plainly appear by an inspection of the detailed Drawing.

Above the bridge a ridge of gravel and stones are formed to produce the present head of water, with the erection of a dam wall on each side to convey the water to the mills. The river above this to the entrance of the canal and to Lough Ree is studded with eel-weirs, amounting to 12 sets. I am informed there is no vested right in any of them, excepting one, which is near the entrance to Lough Ree, and was was given by King John to the clergy, in lieu of a piece of ground upon which the castle stands.

By these various obstructions the water in Lough Ree rises from the summer to the winter level, nearly seven feet, inundating the low lands, which are chiefly situated in the bays to a great extent; also along the sides of the river, from Lanesborough to Tarmonbarry, which are also very low, and its destructive consequences are severely felt.

The present fall at the canal lock is four feet, but in the river near the bridge it is much less, which is caused by the different eel-weirs and other impediments above. The mills therefore do not work to the greatest advantage. In winter time they are so much impeded by the back-water rising to such a great height that they are frequently obliged to stop, it being so injurious to the machinery.

To improve the navigation, and to facilitate the drainage, I propose increasing the section of the canal to the same scale as that proposed for Meelick, remove the lock (from its present situation) lower down, near to the entrance of the river, and the earth excavated from the deep or elevated parts will raise and strengthen the banks below, there being a sufficient space of ground on each side of the canal for this enlargement. The middle part, (near the fortifications) where the ground is high, would require a retaining wall as at present, but of more substantial construction, and the section of the canal increasing, as described on the Drawing.

The abutments of the present bridges would also require widening, and instead of stone arches to have swivel-bridges, to open for the purpose of admitting steamers and masted vessels.

At the river part, and for the due regulation of the waters, a weir of solid masonry would require constructing; its upper surface to be in height sufficient to retain six feet water on the level of upper sill of lock. The most appropriate site for this erection appears at a place immediately opposite the barracks, where the river is sufficiently wide for this purpose, and which would afford a good site for the erection of these powerful mills, for the grinding of corn or other manufacturing purposes; and when the surface of the river below is reduced by the removal of Shannon Bridge and Banagher Locks, the fall will be increased to six feet five inches, and there is little doubt its value will be enhanced accordingly.

See Plan of proposed Bridge, No. 15.

From the insecure state of the old bridge, its bad situation and inconvenient approaches, it appears absolutely necessary to erect a new one, the arches of which should be sufficiently capacious for discharging the winter floods with freedom; the piers to be light, and the whole plain and substantial workmanship, (and I have therefore prepared a Plan and Elevation accordingly). The most eligible site for this erection appears to be about 200 feet above the present old bridge, and nearly in a line with the main streets on each side, which would form a superior line of communication, and be of great service and convenience to the town.

After the completion of these several erections, the three mills and the old bridge would have to be taken down and cleared entirely away, together with the eel-weirs, and the various obstructions which impede the current of the water; also the bed of the river would require to be deepened, as described by the Section, where wanted, extending the surface water level to the base of the weir, for the purpose of obtaining the whole height of the fall for the use of the mills, thus rendering the power permanently uniform.

From the extensive population, and increasing trade carried on at this town from a great circuit of country, which is chiefly agricultural, has several large distilleries, is a considerable military station, and being situated on one of the great thoroughfares, between Connaught and Leinster, mark it out as a place of great importance; and the proposed improvements, in opening a permanent and regular water conveyance, would be of incalculable advantage to the town.

Lough Ree.

In the examination of, and sailing along Lough Ree, I find a number of beacons are much wanted to mark out the course, and also to several dangerous shoals and sunk rocks. The parts that require particular attention are coloured red; viz.

Two beacons required at the entrance of the canal at Athlone.

Three on the river course towards the lake.

One beacon at Stone Island.

One ditto at Burnett's Island.

One ditto at Yellow Island.

One ditto at Tew Point, where the shoal of rock and stones extend a considerable way out.

Three beacons at St. John's Point, where there is good shelter and sufficient depth of water for forming a good harbour for shipping off grain, &c.

Two large beacons at Iskeraulin, a shoal of stones and rock, only seen at low summer water, (which is very dangerous.)

One ditto at Inchelorin, (or Quaker's Island.)

One ditto at the point of Cullintrough.

One ditto at the Mill-stone, a very dangerous sunk rock, having only six inches water upon it at low summer water. It is in the direct sailing course from Athlone to Lanesborough, and requires particular attention.

Two ditto are required at Inchyarra M'Dermott, and the shoal lying a little north; water shallow, and requires deepening; and consists of fine marl.

The best sailing course from Athlone to Lanesborough is marked on the Chart by a red dotted line; also the course from the River Juny to Galy Bay, with the various beacons, which would form a superior line of communication from the Royal Canal, to branch out at Ballymahon, and another short canal of about five miles might be cut from Galy Bay to Roscommon. Steam-boats might then tow the vessels from these two points across Lough Ree, which would always ensure a safe and expeditious passage, and be attended with a great saving in distance, (at least equal to 10 miles,) instead of going by Cloondrah and Lanesborough.

It also marks out a short and easy line of intercourse by water from Dublin to Athlone. At present they are obliged to ship and unship the different species of goods to and from the latter place, viz. corn, flour, meal, cattle, pigs, &c. at Ballymahon, and conveyed a distance of 12 miles overland, which must be tedious and expensive; when, by making this short canal, they might be brought in the same vessel to Athlone direct, which would effect a great saving in time and expense.

Curreen Point.

At the entrance to the river, north end of Lough Ree, the channel is very circuitous, intricate and uniformly shallow, which extends a considerable way out from the point, rendering it exceedingly difficult for boats to get either outwards or inwards, even with a fair wind; and what makes it still more troublesome

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troublesome is, that there is not a single beacon-buoy, or anything to mark out the channel.

For improving the navigation at this part, I propose avoiding the present river course, and making a cut across the point more in a direct line with Lanesborough Lock, (the total length across the point is about 400 yards,) to obtain a sufficient depth of water at each end. One-half the distance is almost to the required depth at summer water, and the other part would only require four feet average deepening. It is composed of clay, gravel and loose stones, which would answer extremely well for forming the banks on each side the whole length.

This channel to be 80 feet wide at top water, to afford sufficient room for vessels navigating in stormy weather; the side slopes to be formed to an angle of two horizontal to one perpendicular, protected with stone or other heavy material, to prevent it being washed away.

The banks at each end to flanch or spread out a little, to afford a better entrance, and finished with a stone beacon to each. Several stone beacons and buoys are also required at the entrance in the lake, to be built in a substantial manner, with suitable rings and eye-bolts for vessels to bring up to, and also for the purpose of warping out into deep water. The wide part from this to Lanesborough Lock forms a fine natural harbour, with good shelter, where there is a considerable depth of water and good anchorage.

From Lanesborough to Lough Allen, the canals, locks and bridges for avoiding the falls, and the short cuts, at several of the shoals, are so various in scale, dimensions and levels, that considerable alterations are required to make the works correspond, and be suitable for vessels trading on the Lower Shannon, Grand Canal and Royal Canal; therefore, to put the whole line into efficient repair, it appears necessary to adopt some decided scale. For this purpose, I have taken the dimensions agreed upon by the Directors-general and the Grand Canal Company in 1806, for forming the navigation from Portumna to Athlone, viz. "Locks 80 feet long, by 16 feet wide in the clear, and of such height as to have six feet water over the sills. The canal and cuts in the river to be 44 feet wide at least at surface water, and 24 feet wide in the bottom, and six feet six inches deep at the lowest summer water."

Plans and Sections have been introduced also, showing the continuation of proposed line (as at Meelick) for steam and other large class of vessels, which might be carried into execution along with the system of drainage. Estimates of these several works have been prepared for both propositions, and from the small difference that appears to arise in the (estimated) expense, they seem not to bear comparison, when general utility is considered, (the latter being preferable.)

The Sections exhibit, 1st, the works in their present state; 2d, the size determined on by the Grand Canal Company; and 3d, the proposed enlargement.

Lanesborough.

See detailed Drawing, No. 30.

The navigation at this place is continued by a short canal, nearly a quarter of a mile in length, with a lock, the rise of which is nine inches only; the difference of level (which ought to be the same) between the upper sill of Athlone and the lower sill of this lock (which is the highest) is six inches; the canal is very contracted, and requires increasing, both in width and depth, as per Sections. It will scarcely admit a vessel drawing two feet six inches water. The depth of water is marked on the Plan, in the centre of the canal, with two transverse sections. This lock is 82 feet 4 inches long, and 15 feet 9 inches wide in the clear.

	feet	in.	
Water on lower sill - -	4	7	16th August 1832.
Ditto, upper do. - -	4	4	

John Begg, the lock-keeper, states that the water was six inches lower the last summer than this year; the sills are therefore nearly two feet too high to admit six feet water over them at all times.

The masonry of the chamber and wing-walls appears to have been of solid workmanship, but is greatly neglected, the mortar washed out, and weeds and grass growing in the joints; these require raking out and pointing, and some of the upper courses reset.

The whole of the coping requires to be taken off, dowelled and reset with good mortar, as do the anchor stones, the outer edge of coping to be rounded, and the bank by the side of the lock requires to be levelled, and raised with gravel even with the coping.

The lock-gates have been up about 20 years, and appear as if nothing had been done to them since they were put up, and no attention paid to them; they are in a very dilapidated state.

The frame-work, planking, swing-bars, racks, sluices, &c. are all in a very bad state. The planking is quite decayed, and the gates very leaky. They require taking out, and some partial repairs done to the frame-work, and be newly planked, and, from what can at present be seen of them, they may last a few years longer, (as the pressure is but trifling). The whole should be well scraped, tarred and painted, and the machinery, sluices, &c. put into good order.

The embankment walls of the canal are in a very bad state; much of them are fallen into the canal. They are built dry without mortar, and require considerable repair, levelling up, pointing and grouting with good mortar, and finished at the top with a proper and substantial coping. Part of these walls towards the lower entrance require to be entirely rebuilt.

The western bank to be backed up with earth or gravel, levelled to the height of the coping, and continued to the pier-head, also secured with heavy material at the south end, to prevent the waves in time of flood from washing it into the mouth of the canal.

The eastern bank or backing of the wall on the side to the river runs out in a slope to the water-way of the river course along the canal, and projects out as far as the land arch of the bridge. This requires to be cleared away, and the canal wall secured by a dwarf wall, to admit a greater space for the waters in time of flood.

The foundations of the pier-heads are surrounded by heaps of large stones, continued in the channel, which are very dangerous and obstruct the navigation. These impediments require to be removed and cleared away, and the bases of the pier-heads paved round them in a regular manner, to secure and protect their foundations. Six substantial stone mooring-posts are required for vessels to bring up and secure to.

The lock-house is built upon an arch erected over the upper end of the lock, which is a most inconvenient situation, preventing masted vessels from passing, and also not sufficiently high to admit light vessels (or lumber-boats) to pass in times of flood. It would appear, therefore, that this erection should be entirely removed, and the communication with the bridge continued by means of a swivel-bridge, to open for the admission of vessels.

This house is a somewhat expensive erection, and a neat cabin would have answered fully as well by the side, instead of this, which is built over the archway.

The canal above the lock is very narrow and shallow; it will require deepening to six inches below the sills, (when they are lowered to the proper depth,) and to be increased in width, as per Section.

The embankment wall and the slope next the river require the same treatment as described for that below the bridge, and the western bank formed into a better line, by taking off the angle near Mr. Costello's store, and the whole secured by a retaining wall, which would both prevent the bank from slipping into the canal and form a better towing-path.

A little above the canal is a harbour for craft, and for the convenience of unloading turf. This does not appear to be the best site that could have been chosen for this purpose. Below the town, at the entrance to the canal, a situation presents itself almost formed to hand, which, with a little excavation and a quay wall built, would have answered better.

For unloading turf-boats a slip should have been erected, which would have accommodated the boats at all heights of the water. A harbour, with the walls seven or eight feet high, is not the most convenient. The entrance of the present one and all the interior part requires considerable deepening, and has the appearance of having been filled up chiefly by the unloading of turf-boats.

The lock-keeper states the original specification was to execute the harbour no deeper than nine inches *above* the *lock-sill*, and as such it has been executed, with

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with the foundations of the quay walls, &c. (which ought to have been as much *below* the level of the sill).

A small convenient store and a crane are much wanted, also a few stone mooring-posts, placed at convenient distances. The coping and wharf-walls suffer injury at present from holes being dug in them for fixing the anchors to secure the craft.

Lanesborough Bridge is built of rubble masonry, and is much neglected. It was erected, as appears by an inscription, in the year 1706, and is composed of eight arches of various dimensions, (besides the arch over the canal, making nine). The clear waterway is 206 feet, and the average depth of water flowing through the arches, 16 August 1832, was seven inches.

The piers of the bridge are built upon artificial foundations of gravel and stones; when at a little deeper, a bed of solid rock makes its appearance. Near the foundations the piers are in a very bad state, many of the stones displaced, and, in general, the mortar washed out of the joints for a considerable height from the base. The whole requires underpinning, and properly securing down to the rock; and the arches, parapets, roadway, &c. require great attention in the repairs.

At a short distance above the bridge eel-weirs are constructed in the form of stone walls, from two to three feet in thickness, and of the same height, and which extend nearly across the river. Below bridge are the remains of several eel-weirs and an old ford. These impediments are the sole cause of forming the head of water of nine inches at the gates.

The eel-weirs are the property of —— Belliew, Esq., and are let for 4 *l.* per annum.

It will be seen by an inspection of the General Map, Plans and Sections, that this part of the river is very contracted, both in width and depth, caused principally by artificial formations, and which greatly obstruct the free current of the water, damming it up suddenly, and inundating the lands on both sides the river (which are situated very low) to Tarmonbarry.

For the purpose of improving the navigation and continuing the system of drainage, I propose the following alterations; viz.

To remove all the eel-weirs, with the remains of the mill-dam and ford, excavate in the archways of the bridge from three to four feet in depth, according to the state of the surface of the rock; as also the same above and below bridge. As there appears no necessity for a lock at this part when these obstructions are removed, one side may therefore be taken away, and the other on west side underpinned.

The bauks forming the canal, next the river, to be removed and cleared away entirely, and the part deepened for the channel, as marked on the Section. The large material (stone) composing the walls of the canal to be selected, and a retaining wall built from the lower pier-head to the harbour, described on the Plan by a red line, which will form a fine spacious quay for vessels to lie alongside.

The toll-house and the arch across the canal to be taken down, as also the east abutment, and the opening of which for the admission of vessels made 35 feet in width, to correspond with the proposed new line of communication; the east abutment to be founded sufficiently low for the new channel, and brought up to answer for a swivel-bridge. For this purpose the west arch of the bridge across the river would require taking down, and the abutment for the swivel-bridge to join the pier, both to increase its size for the machinery, and also to afford stability and resistance to the next arch.

By opening the navigation arch to 35 feet and part of the abutment, it will increase the water-way upwards of 12 feet, making it 218 feet, which, with removing other numerous obstructions, will give the water a free passage, and prevent any head forming that may be injurious to the navigation.

The river from Lanesborough to Tarmonbarry retains a fine capacious width, and is of sufficient depth for the navigation and drainage, with the exception of four shoals, viz.

Kilnacurragh, Erragh, Cloonberla, and Lodge-cut or Knappogue. The first and last of these are rather extensive, and difficult and dangerous to navigate. Separate Plans and Sections have been prepared, showing their extent, &c. &c.

Kilnacurragh.

(1.) River Shannon Navigation.

Kilnacurragh.

See detailed Drawing, No. 31.

At this place the river forms a considerable angle, and it is also contracted in width by the formation of several small islands. The depth is very small in summer, by a shoal of gravel, stones and clay. A channel has been made for the navigation on the east side of the centre island; but the dimensions are of so small a scale, and the dredging of it being improperly executed, by the small material being taken out and the large stones left in the bottom, that it forms a very uneven surface, and it scarcely will admit a vessel drawing more than two feet six inches water; and at this draft I found it to be difficult, tedious and expensive to get over.

To render the navigation and drainage more perfect, it is required to deepen the channel on each side of the centre island to six feet six inches from the surface of Lough Ree (summer water) to the full width on each side, taking off the few prominent parts coloured red, and also to remove the small islands in the west channel to the same depth as the other parts. (*See* Plan and Sections.)

Erragh.

This shoal is not extensive, and the river is of sufficient capacity, both in width and depth, for the drainage, but not for the navigation, being too shallow; it therefore requires a channel dredging about 300 yards in length and 30 yards in width, and two feet average depth, or, to correspond with the new levels, six feet six inches from the surface of Lough Ree. Two substantial stone beacons would also be required to mark out the navigable channel.

Cloonberla.

This shoal is almost in every respect the same as at Erragh, but rather more shallow; the same length and breadth may be taken, and the average deepening required is about two feet six inches to agree with the new levels. Two stone beacons would also be required to mark out the channel.

The two last-mentioned shoals are very bad, and for the purposes of navigation have each only a narrow confined channel, irregularly formed, and nothing to mark it out but one or two stumps of piles, which are sawn or broken off a few inches above the surface of the summer water, and protected by heaps of stones lying immediately under the surface, which are frequently not perceived until vessels run upon them and receive injury.

Lodge-cut or Knappogue.

See detailed Drawing, No. 32.

This shoal is the most extensive in this district, (*see* Plan and Section). It is composed chiefly of gravel, stones and clay, which stretch quite across the river, and the average depth of water is not greater than six inches.

Eel-weirs (of stone walls) are constructed, reaching nearly across the river, in thickness from two to three feet, and fully the same dimensions in height.

To preserve the navigable communication and avoid the shoal, a cut has been made on the west side, but the dimensions are of too small a scale to be useful; and by the formation of the eel-weirs, stones, and the whole surface being covered with grass and rushes, these numerous impediments dam up the water and cause a head of from four to six inches, forcing the greatest quantity of water from the river down the cut, rendering it very difficult to get a vessel up, their sectional capacities being so nearly the same, that a head of water is formed at the bows, in height according to the velocity.

The beacons which once marked the passage at the lower end of the cut, are both in ruins, and the material that composed them are now lying in the channel.

To improve the navigation and render the drainage perfect, a channel requires to be formed 180 feet in breadth, and six feet six inches in depth, from the surface of proposed level of Lough Ree. The side slopes to be formed at an angle of two horizontal to one perpendicular; the present cut might form part of the proposed channel.

When the several improvements are carried into effect, which appears a desirable object, it would then form an uninterrupted line of communication, on the same level from Athlone to Tarmonbarry, (or the lock at Cloondrah,)

(1.) River Shannon Navigation.

a distance of 26 miles. The navigation is continued by the canal at Cloondrah and the Camlin River.

Cloondrah Lock and Canal.

Detailed Drawing, No. 33.

The south entrance of the canal at Cloondrah is of small dimensions, very narrow, and the depth of water on the sill is very shallow, being only four feet one inch, and, as compared with the upper sill at Lanesborough, is seven inches too high, (*see* Section); and when the reduction of the water takes place, by the removal of the lock at Lanesborough, of nine inches, and the shoal at Lodge-cut or Knappogue, of four inches, the sills will then be two feet ten inches too high, allowing six feet water over them in summer. Therefore to lower the sills to either of these dimensions almost amounts to a reconstruction of the lock, as it cannot be done in so perfect and sound a manner as required unless by taking down the side walls.

By an inspection of the Plan and Sections of the different parts, it shows the present section of the canal, and as compared with the scale of the Lower Shannon.

The lower part of the canal requires deepening and increasing in width 11 feet throughout, and the southern outlet of the Camlin River also requires enlarging, to allow for the discharge of the water from the mill, and to be flanched out in a bell-mouth form, protected with stone on the face of the slopes, and the bank of the canal finished at the head, with two stone beacons and mooring-rings. The slopes of the side banks should be reduced more horizontally, as described on the Section, as they have slipped down along the whole length, from being too steep.

The earth excavated from the enlargement of the canal might be used to advantage in forming the embankment at the river entrance and guide banks above the winter floods. Back drains on both sides of the canal require clearing out.

The chamber and wing walls of lock are built of rubble masonry, with ashlar hollow quoins and coping; the whole is in a very imperfect state of repair. Some part of the walls bulged out, and the mortar washed out of the joints, which require pointing, the coping resetting, and the sills examining and adjusting to the proper level, and the whole requires a general and thorough repair.

Both pairs of lock-gates, machinery and sluices, which have been put up about 24 years, require replacing with new ones, being in a most ruinous and unsafe state. The lower gates are so twisted that they cannot be made to meet properly when shut; this probably arises from a defect in the sills, being in a very leaky state, and should be examined. Part of the timber of the old gates and some of the machinery may do again.

The upper part of the canal above the lock requires widening and deepening (and the grass which grows in the bottom cutting) to a similar scale as below. Near the accommodation bridge the banks are 20 feet high above the top water, and at this height the width is only 49 feet, and at the surface water 21 feet, the slopes on each side forming an angle of 54°, which are much too upright and contracted, and require increasing in the scale, and the banks lightened.

Instead of making the canal 44 feet wide, as proposed for the other parts, it may be found more economical, and answer nearly as well for this part, to reduce the width to 35 feet at top water, and build a retaining wall for supporting the bank on each side. These walls to be founded at bottom level of canal of sufficient thickness, and brought up to one foot six inches above top water mark; at this height a bench to be formed on each side. On one side it is to be 10 feet in width for a towing-path, and on the other side five feet, which will retain and lodge any matter which may slip down from the slopes. Above these horizontal benches the side slopes to form an angle of 45°, or one horizontal to one perpendicular.

The accommodation bridge requires some slight repairs in pointing the parapets and coping, &c., as does also the lock-house. The Royal Canal enters here, being 61 miles from Dublin.

Camlin

Camlin River.

Drawing, No. 33.

The course of the Camlin River is very circuitous and winding. It measures in length rather more than three statute miles, and in breadth varies from 53 feet to 90 feet, with the exception of a few places which are narrow, confined and quite impassable for laden vessels during the summer season. These parts are of small extent, and require to be increased according to the proper scale. Generally speaking, it is of sufficient depth for navigable purposes, but many of the parts require attention, and a few of the sharp turns easing; the grass and weeds cutting from the bottom and sides, which very much impede the progress of a vessel through them, as also the free discharge of the water.

A towing-path formed on the west side of this river would very much increase the facility of intercourse on the River Shannon and Royal Canal, as it is utterly impossible to discover the track of the river in winter, there not being a single beacon or mark of any description throughout its course; and there is abundance of material for this purpose on the high banks of the canal at Cloondrah, which require removing to increase the section of the canal at that place, and which appears advisable to apply to this useful purpose. The towing-path and small side drains to be 20 feet in breadth.

The contracted parts of the river which require increasing in scale are, viz.

1st. About half a mile from Cloondrah, at the abutments of an old accommodation bridge, which requires to be removed, and the river increasing both in width and depth, according to the proposed Section. The present width between the abutments is 18 feet 2 inches, and depth 4 feet 3 inches at the centre part.

2d. At one and a half miles a little deepening is required, being only four feet deep.

3d. At the junction with the Ballykenny River a little deepening is required, and at a few other places of no great extent. At the north entrance to the Shannon the river is too much contracted, and requires increasing in width, and the angle taking off at the upper side, which would give more freedom to vessels entering.

Two beacons are also much wanted, furnished with rings and eye-bolts, for vessels to make fast to.

This river, from its many abrupt turns and confined parts, renders it unfit for the admission of steamers; but otherwise, when the several parts are increased to the proper dimensions, it would afford an useful line of navigable communication for canal vessels.

The Ballykenny river was examined as far up as the mills, and, with few exceptions the water was found sufficiently deep for trading vessels. The two mills situated near the bridge are now in an useless state, in consequence of the great rise of water during the winter season, which is the time they are mostly wanted. They are in a very good situation for doing business; and having tried the levels, I found the fall to be five feet six inches. A reduction of the water to the summer level would considerably increase the value of this property, and the lands above towards the town of Longford; also to the lands and bogs situated on both sides of the Camlin, which are of great extent, and of a low description, the river being contracted and choked up with grass and weeds, which retards its motion, scarcely having any fall or capacity for discharging its waters, and by a sudden fall of rain the whole country is inundated in a very short period, which frequently destroys the most part of the hay crops before they have time to gather them in.

Continuation of the Line of the Shannon.

Tarmonbarry.

See Drawing, No. 33.

This bridge is built chiefly of rubble masonry, and composed of 11 arches, each about 20 feet span, and total clear water-way 220 feet 6 inches; the piers are six feet three inches in thickness, and the whole founded upon a bed of stratified limestone rock. The foundations of the piers are in a very bad and disjointed state, mortar washed out of the work for a considerable height, and has a neglected and unsafe appearance. The arches are also in a very bad state;

from the face-stones or voussoirs being of ashlar work, and having no bond, they have therefore separated from the other parts of the arch. The parapets are *only one* foot in thickness, and broken down in many places, and the coping thrown off.

The whole structure has a neglected, forlorn and ruinous appearance, and requires a thorough repair, as also the approaches to the same. The roads leading to Strokestown and Ruskey appear similar to many others in this part of Ireland, badly executed in the first instance, and as little attended to afterwards.

Above the bridge the river course to the junction of the Camlin is in many parts contracted, and others divided by small islands, forming a series of irregular channels, both as to breadth and depth, studded in various parts with eel-weirs of stone, of the worst imaginable description, which choke up the passage, and is the sole cause of the rise of the water in Lough Forbes, which extends upwards to the Camlin, Ballykenny and Cloonart rivers, also to Ruskey; and as the rise there is only three feet, it extends its destructive consequences along Lough Boeffinn and Boedarrigg, and the Carnado river, and to Drumsna, inundating a large tract of country on both sides of the river, which are situated low, particularly along the sides of Lough Forbes, and where a free outlet to take off the waters is much wanted.

The bed of the river from the bridge to Fisherstown is partly of rock and partly of gravel, and the total rise from the lower to the higher level in Lough Forbes is about seven feet.

At a little below the north junction of the Camlin with the Shannon, and as a still further increase to these evils, the distillers of Cloondrah are erecting a stone weir half way across the Shannon; there is already an old weir occupying the other half. This they are doing for the purpose of damming up the Shannon waters at this low season of the year, to turn more of it down the Camlin, and prevent it flowing in its natural course, so as to increase the head for working the water-wheel and machinery at their distillery, when there is already a sufficient head if the course of the Camlin was cleared. They are making the wall about two feet high above the present water and four feet in thickness. This is certainly a very improper erection, and one that ought not to be permitted. These encroachments appear to be done with impunity, as there does not seem to be any conservators of the river. The damage done to the lands above must be considerable, and the landowners and occupiers, probably not aware of what is going on, impute it to some natural cause, and there the matter rests. Hence it appears how necessary it is that proper weirs should be constructed at the various places where they are required, and that all impediments of whatever description should be cleared away; thus a decided gauge would be formed for the due regulation of the Shannon waters, and until this be accomplished, little can be effected in the way of general improvements, drainage of the lands, and improving the navigation.

Deficiency of authority to prevent Obstructions.

No. 33.

For the improvements at this part, I propose erecting a weir at a little above Tarmonbarry Bridge (*see* Plan), where the bed of the river is of solid rock, and affording a good site for its erection. This weir to be of such capacity and height as would retain the proper head of water for the canal at Cloondrah, as well as for the mill and works connected with the distillery, and during the highest floods prevent a greater rise than one foot six inches or two feet.

To remove and clear away all the eel-weirs and other obstructions, and to form a regular and even channel, in the shallowest parts 150 feet wide, and six feet six inches in depth throughout, calculating from the surface water in summer in Lough Forbes. The rock and gravel excavated would form the side banks, which should be sloped to an angle of one and a half to one, which would keep the river in its due bounds.

This new line of communication would enter at about 200 yards below the bridge on the west side by a canal, with lock and swivel-bridge, upon the same scale as that already described for the part at Meelick. This line would be only half the distance compared with the present course of the Camlin river.

There is an old mill situated at the west end of the bridge, now in a ruinous condition, and seldom worked, being placed so disadvantageously with respect to the fall of water. By the proposed alteration, this erection would have to be removed, being in the line of canal. Situations would be afforded suitable for the erection of two mills of a more suitable and better description, which, it is submitted, would amply repay the erection of the dam.

The mill and works at the distillery at Cloondrah has a fall of four feet, which gives motion to a powerful water-wheel and other apparatus, and some valuable machinery for grinding corn, &c. By the due regulation of the waters of the Shannon at these falls, it would afford them greater facilities, and improve their works to a great extent.

In the examination of Lough Forbes, I found the water was sufficiently deep throughout, with the exception of one place at the contracted part near the centre; it is of no great extent, being only about 60 yards in length, about the same breadth, and 12 inches the average deepening required. Two substantial stone beacons are much wanted, and the reeds and rushes cutting away, having grown to such extent and height as renders it difficult to find out the passage.

Two beacons are also required at the south entrance to Lough Forbes, (in position as marked on the Map). A reduction of the waters in this lake to the summer level would greatly add to the appearance, improve the navigation, and materially benefit the lands situated on its sides, also relieve from water the extensive bogs on the west side.

From Lough Forbes to Ruskey the river is of considerable capacity. In this distance several bad shoals present themselves which obstruct the navigation, viz. at Clooneencox, Clooneenkennedy and Cloonfad, and Birds' Island. Separate Plans, Sections, &c. have been prepared, showing the required enlargement. Being composed of gravel and clay, no difficulty presents itself as to their excavation.

Clooneencox.

This shoal extends itself quite across the river, and it is nearly dry in summer. Its length is about 300 yards. To avoid this shoal a cut has been made, but of such small dimensions (*see* Section) that the greatest quantity of water flows down, and renders it a most difficult and dangerous passage. There is a fall of about four inches here, which is greatly increased in winter. Our vessel being flat-bottomed, the dimensions of the canal boats, and drawing only 1 foot 7 inches forward, and 2 feet 7 inches aft, could not pass without great exertion; she got aground immediately upon entering the cut, and was obliged to lighten and trim her, and then it was with much attention and very great labour that she was got through. At the entrance there are two beacons, which are most improperly constructed, and some of the loose stones upon which they are founded are washed out into the channel; it appears likely that another winter will make them complete ruins.

See detailed Drawing, No. 34.

After getting through this cut we had to encounter more loose stones in the channel, upon which we grounded, and were obliged to be warped off with a double-purchase windlass and six men. These difficulties made it a very prolonged passage. Immediately above this is another bad place, called "Clooneenkennedy-ford;" we next came to Cloonfad-cut, at the entrance to which one of those badly constructed beacons has become a complete ruin, and the stones which are scattered in the bed of the river can with difficulty be avoided; this cut, like the last, is scarcely of sufficient dimensions for a single boat to pass. There is also a shoal at Bird's Island, opposite *Toomiskey*, a short distance below Ruskey Lock; here there is a channel dredged, or so professed to be, for the navigation: the small gravel appears to be removed and the large dangerous stones left; it is beaconed by wooden piles on each side, but the channel is so narrow, and at present so shallow, that it is all but impossible for any vessel to pass. Our vessel was aground three times in passing this short channel, and was obliged to be forced all the way through by warping; after this, more in the vicinity of the lock, not being farther than a quarter of a mile below it, the vessel grounded upon a large stone, and was with great difficulty got off; and although this stone is known by every one concerned to be lying here, and to be so dangerous, yet it appears that no one considers it his business to remove it, although this could be done with comparatively little trouble, having proper tackle.

See detailed Drawing, No. 35.

See detailed Drawing, No. 36.

This part of the navigation, comprised with the above-named shoals, does not possess any one of the requisite necessary qualities to an efficient navigation.

(1.) River Shannon Navigation.

In consequence of our vessel being well manned and having sufficient tackle, it may be conceived that we performed this part of the passage with much more comparative ease than the trading boats can, which are neither so well found nor manned; and hence it may be seen that these difficulties amount almost to an entire prohibition of the navigation. Much difficulty was experienced in getting the vessel through Ruskey Canal, and was obliged to lighten and trim, so that the draft of water was 2 feet 4 inches aft, and 1 foot 8 inches forward; but still she touched the sides the greater part of the way, and having 20 men hauling, besides a warp a-head applied to the double-purchase windlass. Met with a vessel stuck fast in the canal, partly laden with machinery, from Lough Allen, bound to Killaloe, No. 20, belonging to Mr. Farrell of Cloondrah; the difficulties this vessel experienced on her passage will be seen by the following extract of a letter from Mr. D. Martin of Lanesborough.*

Ruskey.

See detailed Drawing, No. 37.

The lock is 99 feet in length and 18 feet 5 inches wide in the clear, the rise is three feet, the depth of water on upper sill four feet two inches, and on the lower sill of gates four feet three inches. By reducing the water to the same level (at the shoals of Clooneencox, Cloonfad and Bird Island) as Lough Forbes, the depth of water will then be only 3 feet 11 inches on the lower sill, which, to obtain six feet water in the dry season, is two feet too high, and will also be nearly the same at the upper sill.

The chamber and wing walls of lock require to have the joints raked out and pointed, coping and anchor stones taken off and reset, and the stalectites growing out of the joints of masonry in chamber of lock should be chipped off.

Both upper and lower gates have been up about 20 years, and are in a very dilapidated state. The main framework of oak is much decayed, as also the planking, foot-boards, &c., and the whole requires taking out and replacing with new ones. Some of the timber, iron work, racks and head-stocks, may be brought in again in constructing new gates.

The length of the canal is 67 chains, or rather more than three-fourths of a mile, and is of a very contracted scale throughout, barely sufficient for an empty boat to pass along with freedom, (*see* Section,) and its entire length requires increasing in size, both as to width and depth. The slopes on each side are very upright, and the banks in many parts are of considerable elevation, which has been caused at the time of forming the canal by lodging the excavation too near the brink; and by the rise and fall of the water in the canal it loosens the sides, and the earth, stones, &c. are continually falling and filling up the canal.

On the east side of the canal there is the remains of an old mill-race, nearly equal in size to the present canal, and of nearly the same length; it has been in an useless state for many years. By purchasing the right of this property it would afford sufficient space for increasing the canal to the proper dimensions, and also for depositing the excavation, which, by levelling the surface, would form good quays, &c.

To facilitate the loading and unloading of vessels at this place a quay wall has lately been constructed, but is at present in an unfinished state, and the earth, gravel, &c. excavated from the foundations is lying upon the bank in a great heap, which prevents any horse, cart, &c. from approaching the quay, which renders it useless; this material requires taking away, and the place finishing.

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* "The vessel left home 20th July, and proceeded to Lough Allen, and were able to leave Lough Allen the 29th; they were only two feet ten inches depth. The first place they were stopped was at Battle Bridge; they were stopped the second time at Carrick, and was obliged to unload same; they were stopped the next at Curnacurra; they were stopped and had to unload at Curlana Bridge, or otherwise Jamestown; she rubbed and was delayed by discharges at Ruskey Bridge; between Ruskey and Cloondra they were obliged to unload and to employ a lighter at Clooneen; they could scarcely get through Cloondra Canal; they were delayed at different places between Cloondra and Lanesborough, and they were three days unloading and loading at Lanesborough, and had to employ a boat to lighten; they were stopped at Lanesborough 12 days with contrary winds, and eight days at St. John's Castle, in Lough Ree; they were 13 days at Banagher, waiting for the clerk of the quarry; they were delayed 11 days with contrary winds at Lough Derg. They have just returned, the 1st October, and had only 18 *s.* per ton, and had to pay all charges out of that; the tonnage they had in was 26, and the crew three men."

The accommodation bridge crossing the canal appears substantial and of good size, being 18 feet span, and 16 feet from the surface of the water to the soffit of the arch; some light repairs are wanted, such as pointing, and the parapet walls repairing, &c.

Ruskey Bridge is built of rubble masonry, and consists of nine arches of various dimensions, (*see* Elevation,) making the total clear water-way 199 feet 3 inches. The piers are from six to eight feet in thickness, and the foundations very insecure, being built upon large irregular stones which appear to have been thrown in promiscuously. The whole of the piers require attention in the repairs, in underpinning and pointing.

Above the bridge eel-weirs are constructed in the form of massive stone walls, about four feet in thickness and five feet in height, occupying the whole of the river course, except five openings for fixing the nets of about four feet six inches in width; these obstructions seem to be fully as bad as any upon the river. A little way above the weirs a ridge of solid rock presents itself, stretching directly across the river; the depth of water flowing over it (13th August 1832) was from four to six inches.

Below bridge there are two sets of eel-weirs of the same description as those above, belonging to Lord Longford and Sir Hugh Crofton, and the rents amount to 11 *l.* 10 *s.* per annum. The eel-weirs above the bridge belong to Lord Granard and the Bishop of Elphin, and the rents amount to about 45 *l.* per annum.

The above obstructions, acting in conjunction with those at Tarmonbarry Bridge, are the cause of damming up the water in Lough Boeffinn and Boedarrigg to Drumena, also up the Carnado River, to the height of five feet six inches. The lands in this vicinity are in general somewhat more elevated than below Ruskey, therefore its destructive consequences are not so severely felt; still it appears desirable to reduce the water to the summer level, which by the due regulation would improve the navigation and the lands in its vicinity.

To effect which I propose to remove entirely the eel-weirs above and below bridge, with the numerous collections of stone and other impediments, and produce an even surface, to construct a stone weir of such height as to suit the present head of water against the gates, viz. datum four feet. The best site which presents itself is at the natural barrier of rock which crosses the river about 200 yards above the bridge; it lies so near the surface of the water that little would be required, only to level the top, and by building up a single course of stone it would be found sufficient, which might be secured to the rock by wooden trenails, and the whole of the work to be made solid.

The Plan and Sections show the canal in its present state, also two different scales for its enlargement.

For lowering the lock-sills two feet, to afford six feet water, the whole would have to be taken down and reconstructed. The abutments to the accommodation bridge to be underpinned, or an inverted arch to be introduced; and by adopting the largest scale it would have to be taken down altogether, the abutments increased in width to 35 feet, and a swivel-bridge constructed for opening and shutting, and applicable for steamers and masted vessels, and the lock to be of the same scale as proposed for Meelick.

The wing walls of lock would require protecting with a wall of about 100 feet in length, to defend the banks from the action of the water from the sluices. The canal slopes formed to an angle of 1½ horizontal to 1 perpendicular, and the top banks formed in a regular manner, gravelled and finished, with two beacons at the north end. Several stone mooring-posts are also required to be fixed at convenient distances for the securing of vessels.

Loughs Boeffinn and Boedarrigg.

The distance from Ruskey to Drumsna is about eight miles, passing through the small lakes Boeffinn and Boedarrigg, the sides of which are greatly diversified, in parts well wooded, and presenting scenery of a pleasing description; the general appearance of the country here is greatly improved, as compared with the lower parts of the Shannon. *See* General Map, No. 6.

Several beacons and buoys are much wanted in these lakes and narrow parts, which are described in the General Map.

(1.) River Shannon Navigation.

The depth of water is in general very good, and sufficient for navigable purposes, with the exception of four shoals of small extent; viz. at Derrycarney, Point of Skeagh, Mayglass, and at the entrance of Lough-na-nouge.

See detailed Drawing, No. 38.

The first of these shoals is the greatest in extent, composed of gravel, clay and marl; it is situated at the junction of the two lakes, forming a narrow neck. A separate Plan has been prepared, showing the present depth of water and its imperfect and contracted navigation. A regular channel requires forming, 150 feet wide and 6 feet 6 inches in depth, from the present surface of water (16 August 1832), datum four feet, on the upper sill of Ruskey Lock. Beacons and buoys are also much wanted to mark out the proposed channel.

The other shoals are composed of gravel and clay, forming very narrow ridges across the river, and their extent being so small, it appeared unnecessary to make separate Plans and Sections for them. All that is required at these places is to dredge the passage about 100 feet wide and 6 feet 6 inches in depth, and substantial beacons erected on each side to distinguish the passage. Turning to the west through Lough-na-nouge, the navigation is continued by a canal to Jamestown, being a distance of nearly two miles, to avoid the circuitous course of several miles, formed by the river, and which is only navigable to Drumsna.

At Drumsna there is a small quay or wharf for facilitating the unloading and loading of vessels. This requires considerable deepening at the upper and lower ends, and out a little way towards the centre of the river.

Drumsna.

See detailed Drawing, No. 39.

Drumsna Bridge is built of rubble masonry; it is rather of modern erection, and consists of eight arches of various sizes, one of which, on the Leitrim side, has been blocked up about 14 years. This, I am informed, was blocked up by a Mr. Waldron, who is since dead. The seven arches form a clear water-way of 175 feet 11 inches. The piers have the appearance of being built upon a loose artificial stratum of gravel, the foundations of which are in a very loose and disjointed state, also the parapet and coping are in a very dilapidated state, and the whole structure requires an effectual repair.

At the present time three of the arches are completely dry, and the remaining four arches have an average of 1 foot 3 inches depth of water flowing through them, the surface of which is of the same level as Ruskey.

Above bridge the river course is rather contracted by several small islands, and at Drumdarragh, near the seat of Admiral Rowley, there is a fall of three feet, over a bed of limestone rock of an even surface, forming a gradual descent, and quite level across. This rock is of a soft shaly texture and easily removed. Three sets of eel-weirs are constructed in this short distance; they are in the form of stone walls, of considerable height and thickness, and extend nearly across the river, and are the cause of damming up the water in times of flood against the mill at Jamestown, producing backwater against the wheel. These eel-weirs are the property of Sir Gilbert King and Admiral Rowley.

From the upper weir the river spreads out to a considerable width and depth to near the mill.

Jamestown.

See detailed Drawing, No. 39.

Jamestown mill is built at a very contracted part of the river, upon a bed of limestone rock, which forms the bed of the river. The mill-dam, sluice-gates and other erections occupy four-fifths of the entire channel in breadth.

The dam is formed of a massive stone wall, which runs nearly at a right angle 70 feet out, and then in an oblique direction 500 feet in length across the river. The height of the dam is four feet above the surface of present water, and leaving an opening on the west side only of 44 feet for the river course, and this space is partly made up in summer to form the required head of water for working the mill. The lower end, which projects 70 feet, has openings and furnished with sluices to open or shut when the water is high, and used upon any emergency at the discretion of the mill-owner.

In consequence of this improper erection, when the floods descend it prevents the free discharge of the waters until the increasing column has acquired a surplus height of four feet, besides the sheet of water flowing over the dam, which may be calculated at two feet and a half, forming a total rise of at least six feet six inches. The mischief accruing from such impediments as these is too plain to need description.

Jamestown Bridge is built of rubble masonry, and consists of seven arches of nearly 20 feet span each, clear water-way being 139 feet 4 inches. The piers are similar to all the other bridges, constructed upon loose stones, many of which have been washed away by the floods; the whole of the piers are disjointed and the mortar washed out for a considerable way up, and require pointing, underpinning and putting into good repair throughout. The loose stones, gravel and rubbish require to be cleared away from under the arches.

Immediately above the bridge eel-weirs of thick stone walls, and four feet above the present water, are constructed quite across the river, leaving only very small openings (for fixing the nets) for the water to pass through, so that but a very small portion of the water can escape until it has accumulated to a head of four feet and a half at this point. These weirs belong to Sir Gilbert King and Mr. O'Bierne.

The water last winter at the upper end of Jamestown Canal was seven feet six inches higher than it is at present (16 August 1832). The extraordinary rise at this point can be accounted for by the several impediments thrown across the stream in the vicinity (viz. the contracted bridge, eel-weirs and mill-dam), and which is corroborated by the evidence of several respectable individuals occupying farms along the sides of the river, and who receive much injury by its overflowing its banks for such a long period. Its destructive influence reaches, and is severely felt over a vast tract of country, on both sides of the river, to Carrick, Boylewater, Lough Key, and the low lands on its borders; also to Hartley, Port, and the town of Leitrim, Battle Bridge, and almost to the entrance of Lough Allen; the lands on each side are submerged to a great extent, and for a long period. The farmers frequently lose their crops by floods that happen early in July, and which leave a deposit highly detrimental to the grass and to the cattle. This season has been very favourable for saving the hay crops, having been all got in; but for two or three seasons before they suffered great losses.

By an inspection of the elevations and comparative scale of the clear water-way of the several bridges on the Shannon, it will be seen that the bridge at Jamestown is not of sufficient capacity to admit the flood waters as they descend, being less than Carrick Bridge by 94 feet, and Drumsna by 36 feet 7 inches. Therefore it would appear necessary to increase the water-way by the addition of two more arches of 20 feet span each, which would then make the clear water-way 179 feet 4 inches. For constructing these arches the west side affords the most convenient and the best site.

All the piers would require securing and underpinning to the rock, and the open disjointed work grouting and pointing with good mortar. The gravel, stones and rubbish collected under the arches would also require excavating and clearing out down to the rock, or four feet under the present surface of summer water.

The mill-dam requires taking down and reconstructing in height equal to the level of summer water, and formed in a regular curved line, stretching in an oblique direction across the river; there would be no necessity for the sluices and machinery but what is required to supply the water-wheel.

As the channel is contracted at this point, it would require increasing in width, by excavating a portion of the ground on the west side, protecting it by a stone wall from the action of the water falling from the weir. The fall of water at this part is only three feet three inches, which is but very small, and were it not for the great body of water at command in winter time they would not be able to do much work, as the back or tail water so much retards the motion and strains the machinery. A little way further down the river a much better situation offers itself, (*see* Plan,) and where, by the removal of the eel-weirs, and a portion of the soft rock, opposite Drumdarragh, a fall of six feet might easily be obtained. This situation would afford the erection of a mill on each side the river, and providing the dam was made in a proper manner, sufficiently tight, the water would be abundant to supply the two machines, and do the work in a more efficient manner.

Eel-weirs, and the numerous collections of stones and other obstructions at Drumdarragh, and down the river to Drumsna, require removing and clearing out of the course; also the gravel, stones and rubbish removed from under the arches at Drumsna Bridge.

Jamestown Canal.

See detailed Drawing, No. 39.

A SEPARATE Plan and numerous cross Sections have been prepared for the purpose of showing the state of this part of the navigation. The canal enters at the west end of Lough-na-nouge, and for the distance of nearly half a mile from the lock; it is a very narrow channel, and only from 21 to 27 feet in width at top water in the greater number of parts, and the depth, taken in the middle, at a great number of parts was found rather less than four feet, and barely sufficient for a boat drawing two feet six inches to pass. For a short distance it passes through a deep cut of mountain clay and gravel, forming a steep bank on each side, at an angle somewhat less than 45°, and the whole requires increasing to the proper scale. The lock is built of squared ashlar, and appears of tolerably good workmanship; it is 14 feet wide, and 72 feet 6 inches long in the clear of the chamber. The rise is six feet four inches, water on upper sill three feet eight inches, and lower sill three feet ten inches, the first being two feet four inches too high, and the last two feet two inches, to allow six feet water over them, and the lower sill is four inches out of level, or higher than Ruskey. The section of the lock is much contracted by the walls battering from the bottom to the surface water. Both upper and lower sills are in a bad and leaky state; many stones in the forebay and chamber walls are displaced; and, from the considerable leakage, it seems that the lower part should be examined. The lower sill is said to be in the same state, but this could not be seen, as the water was on it; and some of the stones of the hollow quoins at the lower gates are displaced. The wing-walls at the tail of lock require coping, and the retaining walls to side banks building up, and the whole of the chamber and wing-walls require the joints to be raked and pointed, and all the coping reset.

The two upper courses of the masonry of this lock were added about 13 years ago, and the necessity for this is supposed to have arisen from the eel-weirs and mill-dam at Jamestown preventing the escape of the winter floods, and thus overflowing the original coping of lock, as also the canal banks.

Both pairs of gates are in a very leaky and dilapidated state, and should be replaced by new ones; some of the cross bars may come in again, as may the working gear and some part of the iron work and swing bars.

The section of the canal from the lock to the first bridge (about 31 chains) is 33 feet wide at top water, and the side slopes are better formed; but the depth of water continues nearly the same, barely four feet, which shows that two feet six inches deepening is required nearly throughout the whole line. There are several abrupt turns in this canal, which might have been avoided, and it might have been made at a less expense by going more in a direct line.

Both the accommodation bridges over this canal are very small in capacity and of less width than the lock; they are placed at very inconvenient angles with the line of the canal, so much so, that it is with difficulty a light vessel can get through, and in times of flood they are not of sufficient height to allow them to pass; they both want considerable repairs to the wing and retaining walls, coping, &c. The wing walls are sunk and are leaving the centre parts; the roads over them also want repairs, as at present the archstones are bare. Both these bridges require to be taken down and rebuilt in a substantial and proper form, and of suitable capacity to the scale of canal.

The distance between the bridges is about three quarters of a mile, one-third of which the canal passes through a loose limestone rock; in this latter portion it is of the worst description, being in some parts so very crooked and confined that a light boat drawing two feet six inches can hardly navigate without striking on one side or the other; and this is rendered doubly dangerous from the rock never having been in the slightest manner trimmed or shaped, but left as it was blasted, forming sharp angles and a very irregular face.

The banks on each side present a very upright face, by the excavated material having been lodged so near the edge of the slope; and as there is no bench or towing-path formed to receive or catch any loose material, the stones and other matter are continually rolling down and filling up the canal, being loosened by the pigs and cattle being allowed to graze on the banks and steep places.

This

(1.) River Shannon Navigation.

This part requires increasing in size, and forming into a more regular line, as described by the red lines on Plan and Sections.

Above the second bridge, the canal is of the same confined description as that already described, and requires increasing in size; the banks are low on both sides and mostly inundated; they occupy a considerable space, and might be raised to advantage by the superfluous material excavated from the rocky parts, and which would form a good quay for landing or shipping off goods. The entrance should be formed into a better shape, and protected by a pier-head on the east, and the towing-path wall continued to nearly opposite the Old Fort on the west side.

For improving the navigation in conjunction with the system of drainage, I propose the following alterations: That portion of the canal below the lock being of contracted dimensions, and a great part through deep excavation, a considerable quantity of earth would have to be removed to form it to the required scale; to avoid this in a great measure would be by taking down the present lock, which makes it appear necessary both by its dimensions being too small and the repairs required about the bottom sills, and also by being upwards of two feet too high; to rebuild the same to the east of the high ground and near to Lough-na-nouge. The rise of the lock is six feet four inches from the surface of the water from the upper to the lower levels, therefore it would elevate the bottom of this lower part of the canal to the same level as above the lock, allowing six feet water over the sills. By an inspection of the sections, it will be seen that only a small quantity of excavation would be required from the sides, which would be sufficient to make up the hollow parts near the lock.

The size of the lock should not be of less dimensions than those upon the Lower Shannon, or on the proposed scale adapted for steam vessels, as already described for Meelick, which appears preferable; in the latter case the abutments for the accommodation bridge would require constructing 35 feet in width, and a swivel-bridge erected instead of stone arches.

Throughout the line the canal would require enlarging according to the sections described, with the top banks forming, also some of the quick bends or turns adjusting.

The back drains on each side appear never to have been completed to the proper level; the water at the present runs therefore into other channels, on one side through some ground belonging to the Marquis of Westmeath, and on the other into the drain from Lough Cartron (which are shown on the detailed Plan).

By the proposed improvements of the Shannon levels, the drains from Lough Cartron and other small loughs in the vicinity would be opened, and be the means of improving the land in the neighbourhood, much meadow lands being at present subject to the floods.

From the north end of Jamestown canal to Carrick is about five miles; the river is of great breadth, spreading out into several small bays or lakes, and the depth of water was found generally of sufficient depth for navigable purposes, except at three places, viz. opposite Doyle's Island, Curnacurra, and at Grose's Islands, the first and last of which are of small extent, having four feet or four feet six inches water on them, but little deepening would be required.

Curnacurra.

See detailed Drawing, No. 40.

At this part the river forms a very considerable bend, nearly a right angle, and by the shallow depth of water across, having only three feet water in the centre of the narrow gap, each side being almost dry, renders it difficult for even a light vessel to pass with freedom.

The shoal is formed of gravel and clay, with several eel weirs of stone, now in a ruinous and useless state; they occupy the whole breadth of the river, except the passage for the navigation, about 20 feet wide, which had a stone beacon on each side, one of which is a ruin, and its fragments are now lying in the channel; there are four other beacons to mark out this imperfect course, where a number of large stones are lying with only about two feet water upon them.

To make the navigation perfect, and afford facilities to the drainage, a channel requires forming 150 feet in breadth, in form as described on the Plan, and six feet six inches deep from the surface water in summer, or datum three feet

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feet eight inches on the upper sill of Jamestown Lock, and the whole of the present beacons removed: the material excavated from this channel would make up the bank on the east side, formed to a slope of one and a half to one, which would answer for a guide instead of the beacons.

Several buoys and beacons are required in this distance, viz.

1 buoy on the east side of the river at the old fort, it being a rocky bottom and shallow upon that side.
1 at Doyle's Island, about 70 feet east of the island.
2 beacons at the upper and lower points of Corry.
1 ditto at Runcurreen Point.
1 ditto at the point opposite.
1 ditto at the shallow point of rushes at Anderson's Island.
2 ditto at Grose's Islands.

In this district the callows and low meadow lands are inundated extensively; they are situated low, and from their general appearance the water would require to be kept at or near the summer level (August 1832) to drain them effectually.

Carrick.

Carrick Bridge is built of rubble masonry, well formed, and rather of modern erection: it consists of 11 arches of various sizes, and the total water-way is 233 feet 8 inches. The piers of the bridge at their foundations, and for several feet high, are in a very loose, dilapidated and unsafe state. The stones upon which they stand are fast washing away, and appear not able to withstand the floods of many more winters, unless repaired. The parapet over one of the cutwaters has fallen into the river, and is dangerous to foot-passengers. It appears to stand upon an artificial foundation of stones and gravel thrown across, and similar to a wall, forming the bed of the river, by which means the passage of the flood-waters is greatly retarded, as there is not more than an average depth of 17 inches water flowing under the bridge at present (August 1832), although less than 100 feet above and below bridge there is quite sufficient water.

See Table of Soundings.

The navigation is continued through the fifth arch from the Roscommon side: the depth of water under this arch is only three feet six inches, and from its being scooped out in the centre part, and the sides left in for a protection to the foundations of the piers, there is scarcely sufficient space left for a light vessel to pass through, and I am told it frequently happens in high floods, that light vessels cannot get under the arches, particularly with anything bulky on deck, such as steam boilers, and the various other machinery used by the coal and iron-works, or sacks, bales, &c. &c.

Above the bridge, on the Leitrim side of the river, a harbour is now being made by —— St. George, Esq., for the loading and unloading of craft; when completed, it will be of very great convenience and service to the town and surrounding country.

Carrick appears a respectable and thriving little town, with a good market, well supplied, and is conveniently situated for commanding the trade, which is chiefly agricultural, of the surrounding districts, and the counties of Leitrim and part of Roscommon.

The whole of the piers of the bridge require to be underpinned, grouted, and pointed with good mortar, and the stones, gravel, &c. forming the bed of the river, and under the arches, to be excavated to the depth of three feet, which appears sufficient for discharging the flood-waters with freedom without producing much head. The retaining walls on the west side of the river by the side of the Sligo road, requires to be repaired, as do the retaining walls on the Leitrim side. Also parapets and coping repaired, joints pointing, and the whole structure wants an efficient repair throughout.

For forming a good navigable communication at this part, I would propose taking down two of the arches and a pier on the Leinster side of the bridge, making an opening of 35 feet for a swivel-bridge. An addition would require building to the side of second pier, to afford sufficient resistance and stability to the third arch, which should be protected by short guide walls upper and down stream. At and in a line with the face of the land abutments, a substantial retaining wall would require building, to be continued to, and finished at, the entrance of the harbour. The same description of a wall would require constructing below the bridge, terminating at the bottom of a small garden, which projects a little way into the line of the first arch; these walls to be founded at the depth of seven feet from the surface of the summer water, and the bed of the river in the line of the channel to be excavated six feet six inches from surface water.

The road communication to be preserved by an iron swivel-bridge, fitted up with the necessary machinery, guide walls, &c., for opening and shutting.

The river, from Carrick to Battle Bridge, is five miles and a half; about one half of this distance to Hartley it preserves its breadth, increasing at the junction of the Boyle Waters, where it spreads out to a great extent. At Hartley the breadth is contracted to 140 feet, diminishing to 120 feet at Battle Bridge, where the river navigation terminates. Its general depth in this distance becomes gradually shallower, on leaving the Boyle Water, and advancing towards Lough Allen; but with the exception of four places of small extent, there is sufficient water for navigable and drainage purposes to Battle Bridge, viz. Hartley, Port, Leitrim, and at between Leitrim and Battle Bridge. The first and two last are of small extent.

Hartley.

Opposite Hartley-house the depth of water in the deepest part, for the distance of 60 feet, was found to be only three feet nine inches on the west side, formed by a shoal of gravel which extends across the river, and becomes shallower towards the east side. A channel requires making 70 feet broad, and the river bed deepening six feet six inches from the surface of summer water, datum three feet six inches on the lower sill of Battle Bridge Lock.

Port.

See detailed Drawing, No. 41.

The natural channel of the river at this part is rather contracted in breadth, and the bottom is formed of rock and gravel. The passage is choked up by an eel-weir formed of stone four feet high, which extends quite across the river course, except a small opening five feet wide, and prevents any boat from passing. A narrow cut has been formed by which the navigation is continued. This cut is of very small dimensions, and similar to all the others already described. In consequence of the main channel being nearly made up, the great body of water is forced down this narrow passage, and great difficulty is experienced in taking a boat upwards through the cut.

The eel-weirs and other obstructions require removing and clearing away, and the cut increasing in size, according to the dimensions marked on the Plan and Sections.

Leitrim.

This shoal is of small extent, being only about 40 feet in length, formed by a pavement of solid limestone rock lying across the river; it makes its appearance on the surface of the water, on the east side, which dips to the west side to four feet six inches in depth. The course of the river forms a bend to the west, and by taking off a small portion of the angle which would form a better channel, it would clear the rock at the depth required, or six feet six inches from the surface water.

A little deepening is also required at two or three other parts, turning towards Battle Bridge, being small ridges, and are marked upon the Map with their depth on the general Section.

Several beacons are very much wanted in this district, particularly in the contracted parts above Hartley, and in the low flats near and at the entrance to the Boyle Water, and at several other parts which are described upon the Map. By a reduction of the waters throughout this extensive line, the banks would always be seen, consequently few of the beacons would be wanted, and those only for marking out the dangerous rocks and shoals.

From the narrow and crooked form of the river a little way below Battle Bridge, a steam vessel of the dimensions already described for working upon this navigation, would not be able to proceed further up the river than the town of Leitrim, to which place she might ply at all seasons, by the removal of the various obstructions already treated of. Therefore when the upper canal is put into an efficient state of repair, the trading boats from Lough Allen may be tracked along the canal by horses to this place, and then might be taken in tow by the steam vessels to the various parts along the line of the Shannon and its branches.

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Battle Bridge.

Leaving the canal and proceeding up the river to examine its course for the drainage, Battle Bridge presents itself; it consists of six arches, and the clear waterway is 113 feet 4 inches. Three of the arches on the Leitrim side of the river have been lately washed away and are now rebuilt. The failure of this bridge may be accounted for by the incapacity of the arches, not being sufficient to allow the winter floods to pass off freely. There is a fall of three feet which takes place on the lower side of the bridge and by the eel weirs, and a temporary weir forms a head of water for the supply of a small mill which is situated upon the west side. This mill is in a very ruinous state, and appears next to useless.

By removing the eel weirs, temporary dam, and clearing the obstructions from under the arches of the bridge, the capacity would be sufficient for discharging the flood-waters with freedom. It also presents a good situation for a mill, by constructing a weir in a proper manner and giving it sufficient space. The head of water might be increased one foot more, without injury to the lands above.

At a mile from Battle Bridge is the Island of Inchagon, where there is a fall of three feet six inches, which is caused by several eel-weirs and numerous collections of stones, which require to be removed from the river course.

Drumherriff.

At Drumherriff the river flows over an extensive shoal of solid limestone rock, which rises from the bottom in a gradual ascent. The total fall is nearly 10 feet, presenting a very superior situation for a mill; near the lower part of the fall there is a small mill with a fall of four feet; towards the upper part a rude bridge is constructed for the accommodation of the inhabitants situated on each side. The piers of the bridge are built of irregular stones laid without mortar, and which occupy almost one half of the river course.

There are several small islands and numerous detached pieces of rock; also several eel-weirs, built of stone, quite across the river and of considerable height. These various obstructions, which dam up the water, are attended with ruinous consequences to the lands above, as far up as Lough Allen.

For continuing the system of drainage, I would propose that all the eel-weirs, detached pieces of rock and the temporary bridge be removed entirely away, and a new bridge constructed, also the projecting parts of some of the islands, and the channel of the river formed even and regular. On the west side there is a line of road from Boyle, which appears recently made; it communicates with the line of road leading to Drumshambo, by the temporary bridge. At this part of the river a very fine situation appears for constructing the new bridge, as the bed of the river is formed of solid rock quite level, and the banks on each side are sufficiently elevated for the arches to clear the water in the flooded season, and by carrying the roadway level across, would avoid the steep ascent, as at present, from the bridge to the road.

See detailed Drawing of Proposed Bridges, No. 15.

The description of bridge suited to this place should be plain and substantial, combined with a light appearance, and as there is abundance of excellent material for this purpose in the immediate vicinity, the whole might be executed at a small expense.

The present old mill would require taking down, and a proper weir constructing, which might be made suitable for the erection of a mill on each side the river. By making these alterations, forming and adjusting the river course, in some few places where there are bends and quick turns above, towards Lough Allen, it would completely relieve the lands from inundation situated on each side.

About a mile from Lough Allen a new bridge is now being erected, to form a new line of communication with the road to Bundoran. It consists of three elliptical arches, forming a clear water-way of 78 feet, which appears too small when compared with the old bridge of Ballytra of 85 feet, having in addition to discharge the waters from the Arigna River, which being a mountain stream descends at times with great rapidity.

Arigna

Arigna River.

The Arigna River enters the Shannon a little below Ballytra Bridge, and in times of flood, by the meeting of the two waters, this mountain torrent backs a considerable way up, and inundates the lands and bog to a very great extent. The way to relieve this is, by simply throwing a dam across the river, near Mount Allen, to cause the water to flow down a cut that is now partly made into Lough Allen, and it being a capacious reservoir would discharge itself in a more regular manner over the weir to be constructed above Ballytra Bridge, and completely relieve this part of the country from inundation. It would also by this means afford two fine falls of water for mill power.

Ballytra.

The bridge at this place is the first upon the Shannon, and consists of four large and three small arches, forming a total clear water-way of 85 feet; it is a very dilapidated and ruinous structure. When the new line of communication is complete, this bridge will then be rendered useless, and may be cleared away. Immediately above this bridge the river presents several channels, which are overgrown with rushes and eel-weirs, choking up and preventing the free escape of the water from the lake, until the head is formed to a considerable height.

To regulate the discharge of the waters of Lough Allen requires the same treatment as the other lakes, by constructing a weir of masonry of such length and height as will retain six feet water on the upper sill of Drumleague Lock, and in time of flood not to exceed an increased head of two feet more.

The best site for this purpose is a little above the bridge, affording ample space.

Lough Allen Canal.

This canal is rather more than four miles in length. The locks and gates appear in a sound state; some pointing is required to the chamber and retaining walls, the gates well tarred, racks cleaned and oiled.

See detailed Drawing, No. 42.

Battle Bridge Lock.

This lock is 72 feet in length, and 14 feet 5 inches in the clear. The water on the lower sill (16th Aug. 1832) was only three feet five inches, which, compared with the upper sill of Jamestown Lock, being three feet eight inches, shows it two feet seven inches too high, to have six feet on the sill. The water on the upper sill of this lock was five feet and half an inch, which has been raised one foot by means of fixing a wasteboard on the top bar of gate, and even with this the sill is one foot too high. The walls of this lock, harbour, and the banks on each side to Drumleague Lock require raising 18 inches to afford six feet water over the sills; this will require the gates reconstructing to answer these dimensions.

To make the lock of the same scale as those on the lower Shannon, and have six feet water on the lower and upper sills in the dryest seasons, it would require taking down and reconstructing to make the work sound and effectual.

The canal from Battle Bridge to Drumleague is of very small dimensions; its general breadth at surface water is only 25 feet, and the depth, when the water is running over the wasteboard, four feet nine inches, taken at the centre part of the canal, which is scarcely sufficient for a single boat to pass, and this only drawing three feet, therefore requires increasing in size, according to the scale. The first accommodation bridge is also much too low to afford light vessels to pass, particularly if they should have anything bulky on deck; this is partly owing to the water having been raised by the wasteboard, and partly by its improper construction in the first instance.

Drumleague Lock.

This lock is 71 feet in length and 14 feet 4 inches wide in the clear, water on lower sill four feet nine inches, which should be five feet and half an inch to correspond with Battle Bridge Lock, ditto on upper sill five feet and half an inch. By an inspection of the soundings, it will be seen that the water throughout to Lough Allen is too shallow, and at the upper and lower entrances of Lough Acres its depth being only three feet nine inches and three feet six inches,

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inches, and the banks are much washed in from the sides, and it appears questionable whether this canal was ever executed to the required scale.

A towing-path is much wanted along the west side of Lough Acres. It is very shallow, and a number of stumps of trees projecting up on the surface, which is dangerous to vessels approaching them. A little further on the side banks are in a very loose and broken state, and require repairs. Also, through the deep excavation, all the loose stones should be cleared away, and the banks properly sloped, to prevent the detached pieces of rock from rolling down into the canal.

Drumshambo.

A WHARF or quay wall is much wanted here, to facilitate the loading and unloading of vessels.

Lough Allen.

ENTERING Lough Allen from the Bridge of Drumshambo to the Island of Gubnacurra, the sailing course is very circuitous, and in several parts through shallow water, as described on the Map; these parts require deepening, and beacons and buoys placed to mark out the proper channel, and for vessels to make fast to.

Lough Allen presents a fine sheet of water, and the mountain scenery around is of a fine description, gently sloping on the sides, and under the first stages of cultivation to near half their height.

At the Island of Gubnacurra my examination of this interesting river terminated, being a distance from Limerick of 137 statute miles, the whole of which is through a fine improvable country.

With regard to the project of making a cut, and turning the waters of Lough Allen down to the sea by way of Sligo, I am of opinion that the scheme is not impracticable, but it would be attended with great expense, and besides, when the proposed improvements are carried into effect, for the due regulation of the waters of the Shannon, there would appear no necessity for such an outlay.

Public Bridges.

THE public bridges situated upon the line of the Shannon, and forming communications between the various counties, as detailed in the former part of this Report, and of which elevations have been prepared, are as follow:

	Clear Water-way, according to the Original Construction. Ft.	In.
Ballytra	85	6
New Bridge	78	0
Drumherriff	82	6
Battle Bridge	113	4
Carrick	233	10
Jamestown	139	4
Drumsna	175	11
Ruskey	199	3
Tarmonbarry	220	6
Lanesborough	206	0
Athlone	210	6
Shannon Bridge	336	0
Shannon Harbour (timber bridge)	450	0
Banagher	295	6
Portumna (timber bridge).		
Killaloe	402	11
O'Brien's Bridge	296	8
Athlunkard	335	0
Thomond	335	7
Wellesley	350	0

These bridges are various as to their capacities or water-way, and also as to their several states of repair, some requiring little to be done to them, others to be rebuilt; which matters have been attended to in the preceding part of the Report.

Public Landing-Places.

Throughout the course of the Shannon there are very few *public landing-places* for receiving or shipping off the produce of the country, and these are situated at considerable distances apart, viz.

Battle Bridge	Erected by Government.
Carrick (partly made)	—— St. George, Esq.
Drumsna	Government.
Drummot	
Ruskey	Government.
Lanesborough	Ditto.
Athlone	Grand Canal Company.
Shannon Bridge	Ditto.
Banagher	Steam Company.
Portumna (two harbours)	Steam Company and Grand Canal Compy.
Jurraglass Bay	Steam Company.
Drummineer	Ditto.
Killaloe	Ditto.

Thus making the total number 14, from Lough Allen to Killaloe, a distance of 130 miles, and in all the above scarcely one is furnished with a crane; and there are only four or five of these places have a public store erected on the wharf for receiving goods. It is evident that this number cannot give the accommodation required for so large a portion of the country, and I would therefore propose to construct landing places at the following parts:

Drumshambo.
Jamestown, near the head of canal.
Tarmonbarry, near the proposed canal.
Galy Bay, in Lough Ree.
St. John's Castle, ditto; very good shelter.
Mouth of River Juny, in Lough Ree.
Newtown.
Seven Churches; limestone quarries near this place.
Meelick, near the monastery, for the convenience of the town of Eyrecourt and its vicinity.
Cloongagauve Castle, Lough Derg; fine limestone.
Cow Island, Lough Derg; for this a drawing has been prepared.

By a reduction of the water to the summer level, as proposed, many other points would present themselves as situations for a further increase of these accommodations, with good lines of road leading to them, when the bogs are brought into a fit state for cultivation.

Materials for Building, and Manure.

Along both sides, and in the vicinity of the Shannon, abundant supplies of fine limestone, suitable for building purposes, are almost every where to be found, and can be produced in blocks of any convenient size, from one to 10 tons weight, or even upwards.

Sand or freestone is rather more scarce: however, there are several places along the line of the Shannon where good supplies can be had, of the finest quality. These are at Killaloe, Ben Mountain near Woodford, Mount Meelick, Slieve Bawn Mountain, where good millstones of a fine and suitable grit are found; and in the neighbourhood of Lough Allen is some of a fine quality, a specimen of which may be seen in the new bridge now erecting at Ballytra.

Excellent slates for building, similar to the Welsh, are got in abundance near Killaloe.

Limestone, gravel and sand, the principal or component parts of the hilly or elevated portions of the country adjoining the Shannon, and throughout the bog districts, are in the greatest plenty; these are particularly useful for road-making and building, and the necessary essentials for reclaiming the bogs.

Marl is in great abundance throughout the extent of the Shannon; in fact, the entire bed, and all inequalities where eddies are formed, is lined with it. This valuable production does not appear to be at present in general use among the farmers along the Shannon, which must arise from a want of knowledge of its properties, as I am told by some of those persons in the habit of using it, and by scientific people, that a very thin application, or what is called a top-dressing, beneficially affects the lands for several seasons; its composition is principally of organic matter, mostly of shells, partly in a decomposed state, and from what is here stated, it is evident that its value is such as will fully repay the cost of obtaining it from the Shannon.

Coal and Iron.

Among the more valuable productions may be enumerated those found in the mountains around Lough Allen, where there is coal and iron, the latter of a very fine description; and as the Arigna works are re-established for the manufacture of iron, it is to be hoped that by proper management this concern will turn out beneficial to the company, as this must be of great benefit to the surrounding country, by the outlay of capital and the employment of a great number of its inhabitants.

Agriculture and Implements.

In this district agriculture appears gradually to be improving, and the mountains are in a forward state of cultivation up to at least half their height. Good roads are much wanted, as those at present in existence are in such a state, that limestone, lime, and manure for tilling the ground, is carried in a primitive way, in *creels* on horses' backs, each load being about two cwt., with a stout man attending, when, with good roads, ten times the quantity might be more easily carried and in less time, thus producing a saving of expense. It may not be amiss to mention, that although the soil along and in the vicinity of the Shannon appears of the finest description, yet agriculture appears rather backward; and I have observed in proceeding along the line, that although the plough is in some instances to be met with in agricultural operations, yet it is not by any means general, but the work is performed by the spade, a tool of a very rude description, and one which renders the performance of the work tardy and expensive; the blade is about four inches broad and 18 inches long, made with a socket, and the handle about five feet long. Some few individuals are in possession of a plough, but it may be looked upon almost as a novelty in many parts of the country along the Shannon, and, like all other machines to facilitate labour, there is a prejudice against using it.

Transit of Produce.

At the present time the produce exported and imported to and from the counties of Leitrim, Roscommon, Mayo and part of Sligo, are carried to and from the shipping ports on the north-west coast, or to Longford or Killashee on the Royal Canal, a distance more or less than 30 miles by land-carriage, along roads of an inferior description, with vehicles of equally bad construction; this frequently occupies a man, horse and cart, with from 16 to 20 cwt., two days and a half, bringing for back-carriage general merchandize, timber, iron and slate for building.

Cattle.

In the great article of fat cattle, sheep, pigs, &c., which are extensively supplied for the English markets, driving them to Dublin, in many instances upwards of 100 miles, is found to deteriorate them very much in value; besides the expense and risk on the road, which in their present state must be something considerable, a great saving would be effected in these matters, as well as in all other produce. The towns upon the line of the Shannon appear to be well situated for commanding the trade of the surrounding country, but hitherto the inefficient state of the river has been a considerable check to their prosperity, deriving little or no benefit from this source in the transit of the various goods and merchandize, although many of them are so remotely situated from the sea-ports.

Markets.

Having purposely visited some of the towns upon market-days, I am enabled to state that there is much business transacted in the sale of native produce, and the various necessaries of life, and the opening of the Shannon appears the main thing to cause these places to attain to considerable prosperity; this may be particularly said of the little towns of Drumshambo, Carrick, Boyle, Athlone, Drumsna and Banagher.

Importance of the Shannon Navigation.

By adopting the proposed improvements, and rendering the Shannon permanently navigable, it would open a great thoroughfare and line of intercourse from the two extremities of the kingdom, thus bringing those parts hitherto

separated

(1.) River Shannon Navigation.

separated by great distances into close and constant communication, which would be the case by applying the great auxiliary of steam power, as the passage of the whole line might be performed in one day, now frequently occupying a month or six weeks, thus rendering the transit of goods certain and cheap: here may be seen the great advantage that would accrue to the agriculturist, grazier, merchant and general trader, as they would then have an easy, punctual, and cheap conveyance for their several commodities and produce, and to the farmer in particular, giving him the opportunity of consulting the various markets along the line, that he might be able to obtain a fair value for his produce, while at present he is generally confined by the expense of land-carriage to the nearest market, and even this in many cases at a great distance, and his profits, if any, are consumed by the mode of transit.

The opening of the Shannon will be the certain means of physical improvement to the people along its banks and in its vicinity, and to the country at large, and is deserving the most serious consideration of the Legislature; as the establishing of lines of intercourse, and promoting habits of industry amongst the people, would be the most effectual means of dissipating the present feelings of discontent, and of preventing the recurrence of those lawless acts which are so much to be regretted throughout this part of the country; but it is a work of too much magnitude, under all the circumstances, to be attempted by any individual interest, and I am of opinion that no great and really permanent system of improvement must be looked for upon the general line of the Shannon, but through the intervention of legislative enactment and superintendence.

In the propositions here offered for the improvement of the navigation and drainage of the River Shannon, it will be seen that no method is proposed which can possibly involve danger in its execution, and that no interests will be interfered with, excepting where decided nuisances exist, such as eel-weirs and mill-dams, shoals, &c., which obstruct the current of the natural channel; and the property of the propietors along the banks will experience no deterioration in beauty, but, on the other hand, will receive decided advantages, by being freed from the hitherto long prevailing floods, and the atmosphere consequently purified from its noxious vapours.

Materials for the works.

For the execution of the several locks, weirs and other works required, great facilities are offered, there being plenty of material every where at hand; and in the removal of many of the great shoals and obstructions, I perceive natural advantages in the formations of the channels, which, if properly managed, will very greatly diminish the expense of the work; and as much of it consists of manual labour only, it will be the means of giving a most salutary relief to numbers of the distressed inhabitants of the counties through which it passes.

Estimates.

In forming the Estimates, every precaution has been taken in making the necessary calculations of the quantity of the work to be performed, and the prices prefixed to each species are moderate, still I am of opinion they can be executed for the sum specified, leaving a fair remunerating profit; and the whole of the works here proposed may be executed in the space of two years, if prosecuted with vigour, and under proper arrangements.

Limerick, 2 Feb. 1833. *Tho. Rhodes*, Civil Engineer.

To Colonel Burgoyne,
&c. &c. &c.

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Estimates.

ESTIMATES.

	£.	s.	d.	£.	s.	d.
ILLAN ARONE, near Limerick:						
9,900 cube yards excavation, to enlarge the capacity of the river - - - - - - - - 5 d.	206	5	–			
Contingent expenses - - - - - - - -	20	6	–			
				226	11	–
CASTLE CONNELL:						
8,400 cube yards excavation, to widen the channel on the east side, and sloping the banks - - - 5 d.	175	–	–			
2,250 cube yards masonry, in the construction of the proposed weir - - - - - 13 s. 6 d.	1,518	15	–			
Purchase of land - - - - - - - -	50	–	–			
Clearing away old weirs - - - - - - -	50	–	–			
Contingent expenses - - - - - - - -	180	–	–			
				1,973	15	–
O'BRIEN'S BRIDGE; making Four of the Arches into Two:						
831 cube yards hammer-dressed masonry - 13 s. 6 d.	560	18	6			
1,761 cube yards rubble masonry, in retaining walls above and below bridge - - - - - - 6 s.	528	6	–			
15,000 cube yards excavation, in deepening and improving the river bed - - - - - - - 5 d.	312	10	–			
Contingent expenses - - - - - - - -	140	–	–			
				1,541	14	6
PARTEEN RAPID:						
9,680 cube yards excavation, in deepening and forming the channel, and removing eel-weirs - - 6 d.	242	–	–			
Purchase of eel-weirs - - - - - - -	80	–	–			
Contingent expenses - - - - - - - -	32	–	–			
				354	–	–
KILLALNE:						
105,000 cube yards excavation, in deepening and regulating the river course and widening the channel, clearing away the eel-weirs, rampart-wall of canal, &c. 6 d.	2,625	–	–			
662 cube yards masonry, in alteration of bridge, by opening four arches into two; east side - 13 s. 6 d.	446	17	–			
2,140 superficial feet flags to cover spandrils - - 6 d.	53	10	–			
640 cube yards filling to ends and wing-walls, gravelling road, &c. - - - - - - - - 6 d.	16	–	–			
6,833 cube yards deepening of canal from pier-head to lock - - - - - - - - 6 d.	170	16	6			
2,333 cube yards hammer-dressed masonry in proposed weir - - - - - - - 13 s. 6 d.	1,574	15	6			
56,700 cube feet masonry in arched stones and coping to weir - - - - - - - - 10 d.	2,362	10	–			
Purchase of fisheries - - - - - - -	1,000	–	–			
Contingent expenses - - - - - - - -	724	9	–			
				8,973	18	–
DERRY ISLAND:						
7,315 cube yards excavation to lower the shoal - - 6 d.	182	17	6			
Two substantial stone beacons - - - - - -	37	16	–			
Contingent expenses - - - - - - - -	22	–	–			
				242	13	6
WHITE'S FORD:						
7,500 cube yards excavation to lower the shoal - 6 d.	187	10	–			
Contingent expenses - - - - - - - -	18	7	–			
				205	17	–

(1.) River Shannon Navigation.

Estimates.

	£.	s.	d.	£.	s.	d.
MEELICK:						
6,800 cube yards excavation for proposed lock for the admission of steamers - - - - - 5 *d.*	141	13	4			
3,840 cube yards puddle - - - - - - 6 *d.*	96	–	–			
1,003 cube feet timber in piling, &c. - - 3 *s.* 6 *d.*	175	10	6			
914 lbs. wrought iron work - - - - - - 4 *d.*	15	4	8			
36,199 cube feet masonry in Ashlar, hollow quoins, &c. 10 *d.*	1,508	5	10			
1,741 cube yards masonry, rubble work - - - 6 *s.*	522	6	–			
1,140 cube feet 5 inches, oak in gates - - - 8 *s.*	456	3	4			
3,214 lbs. wrought iron work in ditto - - - 4 *d.*	53	11	4			
12 cwt. cast iron work in ditto - - - - 18 *s.*	10	16	–			
Eight sluices and machinery - - - - - - -	200	–	–			
1,140 cube feet labour in making and hanging gates - 2 *s.*	114	–	–			
Paint and tar - - - - - - - - -	3	–	–			
78,408 cube yards excavation in proposed canal - 5 *d.*	1,743	10	–			
7,920 cube yards puddle - - - - - 6 *d.*	198	–	–			
213,400 cube yards excavation, to improve and regulate the river bed from Meelick to Killogue - - 6 *d.*	5,335	–	–			
3,712 cube feet hammer-dressed masonry in proposed weir - - - - - - - 13 *s.* 6 *d.*	2,505	12	–			
68,310 cube feet arched stones and coping to face, and top of ditto - - - - - - - 10 *d.*	2,846	5	–			
Contingent expenses - - - - - - -	1,592	–	–			
				17,516	18	–
SHANNON GROVE, Counsellor's Ford:						
7,260 cube yards excavation, in lowering shoal and clearing away the old eel-weirs - - - - 6 *d.*	181	10	–			
Contingent expenses - - - - - - -	18	–	–			
				199	10	–
BANAGHER:						
45,012 cube yards excavation, and forming banks in enlarging the canal to the dimensions proposed, for the admission of steamers - - - - - 6 *d.*	1,125	6	–			
1,100 cube yards excavation in back drain - - 5 *d.*	22	18	4			
660 cube yards labour to masonry, in building abutments and wings for swivel-bridge, to be done with the old materials from the present lock - - - 4 *s.*	132	–	–			
Cast iron swivel-bridge, including machinery for working ditto, side railings, &c., according to the most improved construction, all fixed complete - -	1,120	–	–			
PROPOSED BRIDGE OVER THE SHANNON:						
2,156 cube yards excavation for piers, &c. - - 6 *d.*	53	18	–			
75,908 cube feet hammer-dressed masonry - - 10 *d.*	3,162	16	8			
1,328 cube yards rubble work - - - 13 *s.* 6 *d*,	896	8	–			
5,346 cube feet flags over spandrils - - - - 6 *d.*	133	13	–			
940 running feet curb - - - - - - 6 *d.*	23	10	–			
783 superficial yards broken stone to roadway - 9 *d.*	29	7	3			
208 superficial yards gravelling to footpaths - - 9 *d.*	7	16	–			
400 cube yards puddled clay over spandrils - - 9 *d.*	15	–	–			
720 cube yards filling in between walls - - 6 *d.*	18	–	–			
River:						
96,800 cube yards excavation to deepen the shoal, form the bed, clear away the eel-weirs, &c. - - 6 *d.*	2,420		–			
Clearing away the old bridge, the materials to go in part payment - - - - - - - - -	200	–	–			
Compensation for mill and fishery - - - - -	1,000	–	–			
Contingent expenses - - - - - - -	936	–	–			
				11,296	13	3
SHANNON HARBOUR:						
Improvement of wooden bridge by the addition of another leaf - - - - - - - - -	-	-	-	500	–	–

(continued)

(1.) River Shannon Navigation.

Estimates.

	£.	s.	d.	£.	s.	d.
Leahinch:						
10,000 cube yards excavation, in deepening the shoal and forming the channel, clearing away old weir, &c. 6 *d.*	250	-	-			
Contingent expenses - - - - - - -	25	-	-	275	-	-
Derryholmes:						
39,900 cube yards, to lower the shoal and improve the channel - - - - - - - 6 *d.*	997	10	-			
Contingent expenses - - - - - - -	99	14	-	1,097	4	-
Bishop's Islands:						
39,600 cube yards excavation of channel, clearing away old eel-weirs, and forming the river course - - 6 *d.*	990	-	-			
Contingent expenses - - - - - - -	99	-	-	1,089	-	-
Garrymore:						
16,434 cube yards excavation, and forming river-bed to lower the shoal - - - - - - - 6 *d.*	410	17	-			
Contingent expenses - - - - - - -	41	-	-	451	17	-
Cut below Shannon Bridge:						
2,100 cube yards excavation, required to deepen the cut made across the point of land - - - 6 *d.*	52	10	-			
Contingent expenses - - - - - - -	5	-	-	57	10	-
Shannon Bridge:						
36,036 cube yards excavation to deepen the shoal and remove the present embankment of canal - 6 *d.*	900	18	-			
1,955 cube yards masonry, in underpinning the piers of bridge, building abutments for proposed swivel-bridge, and rebuilding wharf-wall - 13 *s.* 6 *d.*	1,319	12	6			
Cast iron swivel-bridge as described, for Banagher - -	1,120	-	-			
Compensation for fishery - - - - - - -	60	-	-			
Contingent expenses - - - - - - -	334	-	-	3,734	10	6
Clirhaune:						
3,000 cube yards excavation to lower shoal - - 6 *d.*	75	-	-			
Contingent expenses - - - - - - -	7	10	-	82	10	-
Ballynatave:						
6,000 cube yards excavation to lower shoal and open a navigable channel, clearing away old eel-weirs, &c. 6 *d.*	150	-	-			
Contingent expenses - - - - - - -	15	-	-	165	-	-
Tullymore:						
36,960 cube yards excavation to deepen the ford and improve the channel - - - - - 6 *d.*	924	-	-			
Contingent expenses - - - - - - -	92	-	-	1,016	-	-
Calf Island:						
7,050 cube yards excavation at north and south ends of the western branch to deepen the shoal parts - 6 *d.*	176	5	-			
Contingent expenses - - - - - - -	17	10	-	193	15	-
Long Island:						
9,900 cube yards excavation to deepen shoal in the western channel - - - - - - - 6 *d.*	247	10	-			
Contingent expenses - - - - - - - -	24	15	-	272	5	-
Rann Island:						
15,162 cube yards to deepen the western channel - 6 *d.*	379	1	-			
Contingent expenses - - - - - - -	37	19	-	417	-	-

	£.	s.	d	£.	s.	d.
ATHLONE:						
Canal.						
128,200 cube yards excavation - - - - - - 5 *d.*	2,670	16	8			
2,464 cube yards puddle - - - - - - 6 *d.*	61	12	–			
2,600 running yards, cleaning out back drains - -	21	13	4			
1,955 cube yards masonry, in retaining walls near the fortification - - - - - - 13 *s.* 6 *d.*	1,319	12	6			
2,164 cube yards masonry, in abutments and wing walls to swivel-bridges - - - - 13 *s.* 6 *d.*	1,460	14	–			
Two cast iron swivel-bridges, same as described for Banagher	2,240	–	–			
Taking down two old bridges - - - - - - -	100	–	–			
Lock and gates similar to that estimated for Meelick - -	3,000	–	–			
(Materials of old lock to be worked up in new one.)						
River.						
71,500 cube yards excavation to bed of river above and below bridge - - - - - - 6 *d.*	1,787	10	–			
1,100 cube yards rough paving at bottom of weir - 5 *s.*	275	–	–			
1,344 cube yards hammer-dressed masonry in weir, including making dams, pumping, &c. - 13 *s.* 6 *d.*	907	4	–			
34,650 cube feet masonry in arched stones and coping, to face and top of weir - - - - - 10 *d.*	1,443	15	–			
New bridge across the Shannon, according to the design made for this place - - - - - - -	4,920	–	–			
(Roadway 26 feet wide between the parapets.)						
Taking down old bridge and mills, the materials to go in part payment, and building quay walls on each side for turf boats - - - - - - - -	300	–	–			
Purchase of the three mills - - - - - -	4,500	–	–			
Purchase of fishery - - - - - - - -	2,040	–	–			
Contingent expenses - - - - - - -	2,050	–	–	29,097	17	6
LOUGH REE:						
Sixteen substantial stone beacons to mark the sailing course from Athlone to Lanesborough, as shown upon the Chart, to be built with good mortar, complete 18 *l.*	-	-	-	288	–	–
CURREEN POINT:						
6,118 cube yards excavation to form improved channel across the Point - - - - - - - - 6 *d.*	152	19	–			
Four beacons (two at each end of the cut) - - 18 *l.*	72	–	–			
800 superficial yards stone paving to protect the slopes 1 *s.*	40	–	–			
Contingent expenses - - - - - - -	26	–	–	290	19	–
LANESBOROUGH:						
50,313 cube yards excavation to lower the shoal, deepen the navigable channel, and clear away the embankment of canal - - - - - - - 6 *d.*	1,257	16	6			
2,888 cube yards masonry in quay and retaining wall from pier-head below to harbour above bridge - 10 *s.*	1,444	–	–			
(Materials from present wall and lock to be used.)						
423 cube yards masonry to underpin piers and abutments of bridge - - - - - - 13 *s.* 6 *d.*	285	10	6			
Cast iron swivel-bridge, similar to that estimated for Banagher - - - - - - - -	1,120	–	–			
Masonry in abutments, &c., for ditto, according to design prepared for this place - - - - -	780	–	–			
Stone mooring-posts - - - - - - -	6	–	–			
Purchase of fishery - - - - - - - -	80	–	–			
Contingent expenses - - - - - - -	489	–	–	5,462	7	–
KILNACURRAGH:						
24,577 cube yards excavation to lower the shoal and forming the river bed - - - - - - 6 *d.*	614	8	6			
Contingent expenses - - - - - - -	61	–	–	675	8	6
ERRAGH FORD:						
9,000 cube yards excavation to deepen the shoal and form a navigable channel - - - - - 6 *d.*	225	–	–			
Two stone beacons to mark the channel - - - -	36	–	–			
Contingent expenses - - - - - - -	26	–	–	287	–	–

(continued)

Estimates.

	£.	s.	d.	£.	s.	d.
CLOONBERBA:						
9,000 cube yards excavation to deepen the shoal and form a navigable channel - 6 *d.*	225	-	-			
Two stone beacons to mark the channel	36	-	-			
Contingent expenses	26	-	-			
				287	-	-
KNAPPOGUE (Lodge Cut):						
47,652 cube yards excavation, in deepening the shoal, forming the channel, and clearing away the embankment of the cut - 6 *d.*	1,191	6	-			
Contingent expenses	119	-	-			
				1,310	6	-
CLOONDRAH and TARMONBARRY:						
Cloondrah.						
Taking down and rebuilding the lock (using the old materials as far as they will go), also making and fixing new upper and lower gates; (some part of timber and machinery of present gates may be used again)	940	-	-			
45,479 cube yards excavation in deepening and enlarging the canal from the Shannon to the Camlin, and forming channel at lower entrance - 6 *d.*	1,136	19	6			
4,356 cube yards masonry, in retaining walls, sides of canal - 6 *s.*	1,306	16	-			
Two stone beacons at lower entrance	36	-	-			
Contingent expenses	341	-	-			
Camlin.						
22,700 cube yards excavation in deepening and enlarging some parts of the river, and taking off some of the quick turns - 5 *d.*	474	3	4			
5,560 running yards excavating back drains, trimming river banks, forming towing-path, and gravelling ditto complete - 2 *s.*	556	-	-			
Making the necessary culverts and side drains	100	-	-			
Purchase of land	480	-	-			
Stone beacon at upper entrance	18	-	-			
Contingent expenses	114	-	-			
Tarmonbarry.						
41,844 cube yards excavation for proposed canal - 5 *d.*	871	15	-			
3,960 cube yards puddle - 6 *d.*	99	-	-			
Lock and gates similar to that estimated for Meelick	3,296	11	-			
766 cube yards masonry (hammer-dressed) in proposed weir - 13 *s.* 6 *d.*	517	1	-			
30,600 cube feet masonry, in arched stones and coping to face and top of weir - 10 *d.*	1,275	-	-			
121,000 cube yards excavation to bed of river from the weir upwards to near the Camlin, to form a navigable channel, clearing away the eel-weirs, &c. - 9 *d.*	4,537	10	-			
Swivel-bridge similar to that estimated for Banagher, including abutments complete	1,570	-	-			
Purchase of eel-weirs	240	-	-			
Contingent expenses	1,059	8	-			
				18,969	3	10
LOUGH FORBES:						
3,000 cube yards to deepen the channel between the rushes in the middle of Lough - 6 *d.*	75	-	-			
Four stone beacons to mark the sailing course, (two at south entrance and two in the middle of Lough)	72	-	-			
Contingent expenses	14	14	-			
				161	14	-
CLOONEEN COX:						
33,000 cube yards excavation to deepen shoal and form channel, forming banks, &c. - 6 *d.*	825	-	-			
Contingencies	82	10	-			
				907	10	-
CLOONEEN KENNEDY and CLOONFAD:						
36,300 cube yards excavation, deepening centre of river 6 *d.*	907	10	-			
Contingent expenses	90	14	-			
				998	4	-

(1.) River Shannon Navigation.

Estimates.

	£.	s.	d.	£.	s.	d.
Bird and Rabbit Islands:						
32,797 cube yards excavation east side of islands, to lower the shoals - - - - - - - 6 *d.*	819	18	6			
Contingent expenses - - - - - - - -	82	–	–			
				901	18	6
Ruskey:						
New lock and gates, according to the plan as designed for Meelick, for the admission of steamers - - -	2,850	–	–			
117,183 cube yards excavation to enlargement of canal 5 *d.*	2,441	6	3			
2,112 cube yards masonry, in retaining walls to support banks above and below the swivel-bridge - 8 *s.*	844	16	–			
Cast iron swivel-bridge, similar to that designed for Banagher, including abutments and approaches - - -	1,900	7	–			
Two beacons at upper end of canal - - - - -	36	–	–			
Clearing away the eel-weirs above and below the bridge, and regulating the channel below the intended weir -	200	–	–			
Levelling the rock to receive a course of stone to form the weir - - - - - - - -	20	–				
45 cube yards masonry, in retaining walls at each end of weir - - - - - - - - - 8 *s.*	18	–	–			
3,000 cube feet squared masonry, trennaled to rock to form weir - - - - - - - - 1 *s.*	150	–	–			
Purchase of old mill-race - - - - - - -	150	–	–			
Purchase of fisheries - - - - - - -	220	–	–			
Contingent expenses - - - - - - -	860	–	–			
				9,690	9	3
Derrycarney:						
6,930 cube yards excavation to deepen the channel in the contracted part between Loughs Boeffinn and Boedarrigg - - - - - - - 6 *d.*	173	5	–			
Four beacons and buoys to mark out the improved channel - - - - - - - - 18 *l.*	72	–	–			
Eight beacons in the Loughs Boedarrigg and Boeffinn -	144	–	–			
Contingent expenses - - - - - - -	38	15	–			
				428	–	–
Point of Skeah, Lough Tap, and Entrance to Lough-na-Nouge:						
890 cube yards excavation to deepen and form the channel - - - - - - - - 6 *d.*	22	5	–			
Seven beacons to mark the improved channel - - -	126	–	–			
Contingent expenses - - - - - - -	14	–	–			
				162	5	–
Drumsna and Jamestown:						
River.						
700 cube yards excavation to deepen harbour at Drumsna - - - - - - - - 6 *d.*	17	10	–			
33,825 cube yards excavation, deepening shoal of Shaly Rock opposite Drumdarrig, including clearing away the eel-weirs - - - - - 1 *s.*	1,691	5	–			
5,770 cube yards excavation, clearing away mill-dam, widening and deepening the river-course near the mill and at Jamestown Bridge - - - 6 *d.*	144	5	–			
Weir similar to that estimated for Athlone - - -	2,350	–	–			
Building two additional arches and underpinning piers of present bridge at Jamestown, and clearing away the eel-weirs - - - - - - -	1,092	–	–			
Purchase of eel-weirs - - - - - - -	200	–	–			
Contingent expenses - - - - - - -	529	10	–			
Canal.						
Lock and gates similar to that estimated for Meelick - -	3,000	–	–			
Two swivel-bridges similar to that estimated for Banagher, and including abutments and approaches - -	3,140	–	–			
217,932 cube yards excavation to enlarge canal - 5 *d.*	4,540	5	–			
14,080 cube yards excavation through the rocky part, 1 *s.* 6 *d.*	1,056	–	–			
Contingent expenses - - - - - - -	1,173	15	–			
				18,934	10	–
Doyle's Island:						
2,500 cube yards excavation to deepen the channel - 6 *d.*	62	10	–			
Contingent expenses - - - - - - - -	6	–	–			
				68	10	–

(continued)

(1.) River Shannon Navigation.

Estimates.

	£.	s.	d.	£.	s.	d.
CURNACURRAGH:						
19,800 cube yards excavation to lower the shoal and form channel - - - - - - - 6 *d.*	495	-	-			
Contingent expenses - - - - - - - -	49	-	-	544	-	-
CARRICK:						
232 cube yards masonry to underpin piers of bridge, 13 *s.* 6 *d.*	156	12	-			
10,000 cube yards excavation to lower the shoal in front of wharf-wall and under the bridge - - - 6 *d.*	250	-	-			
Cast iron swivel-bridge, similar to that estimated for Banagher, and including approaches and abutments -	1,900	-	-			
600 cube yards masonry, in retaining walls above and below bridge, Leinster side - - - - - 10 *s.*	300	-				
Taking down present arches and constructing a temporary communication - - - - - - - -	150	-	-			
Eight beacons at various places between Jamestown and Carrick - - - - - - - 18 *s.*	144	-	-			
Contingent expenses - - - - - - - -	289	-	-	3,189	12	-
HARTLEY:						
1,500 cube yards excavation to deepen the channel - 6 *d.*	37	10	-			
Contingent expenses - - - - - - - -	3	10	-	41	-	-
PORT:						
3,960 cube yards excavation to form channel along middle of shoal, and clearing away eel-weirs (rocky) 1 *s.*	198	-	-			
Purchase of eel-weirs - - - - - - - -	30	-	-			
Contingent expenses - - - - - - - -	19	-	-	247	-	-
LEITRIM:						
1,500 cube yards excavation to improve channel at the sharp turn - - - - - - - - - 9 *d.*	56	5	-			
Contingent expenses - - - - - - - -	5	-	-	61	5	-
LEITRIM to BATTLE BRIDGE:						
Forming and improving the channel - - - - -	-	-	-	150	-	-
LOUGH ALLEN CANAL:						
Taking down and rebuilding lock at Battle Bridge, so as to give six feet water upon lower sill, and making necessary alteration to the gates - - - -	850	-	-			
145,121 cube yards excavation to enlarge the present canal (according to the dimensions agreed upon by the Directors General and Grand Canal Company) 6 *d.*	3,628	-	6			
Alteration of accommodation bridge above Battle Bridge Lock	150	-	-			
Ditto - - Harbour - - ditto - - - -	100	-	-			
Purchase of land - - - - - - - -	240	-	-			
Contingent expenses - - - - - - - -	472	-	-	5,440	-	6
LOUGH ALLEN:						
Constructing weir above Ballyton Bridge - - - -	1,971	1	-			
Clearing the river-course at ditto - - - - - -	150	-	-			
Clearing and deepening the head of Drumshamlo Canal, and improving the navigable channel to the Island of Gubnacurra, including beacons and buoys - -	500	-	-			
Contingent expenses - - - - - - - -	65	-	-	2,686	1	-
TOTAL Amount of Estimates - - - £.				153,163	2	10

It will be seen that the foregoing Estimates have been formed with the intention of admitting steamers upon the Shannon from Killaloe to Leitrim, within six miles of Lough Allen; but should it be thought that, under existing circumstances, it is not necessary to extend such accommodation any further than Lanesborough, at the upper end of Lough Ree, and beyond that point to continue the navigation agreeably to the dimensions agreed between the Directors General and Grand Canal Company, in that case some deductions may be made from the sums estimated for the performance of those works, the amount of which deductions will be seen in the following statement:

	£.	s.	d.	£.	s.	d.
LANESBOROUGH:						
Swivel-bridge - - - - - - - - - -	-	-	-	1,900	–	–
TARMONBARRY:						
Proposed canal - - - - - - - - -	4,694	–	–			
Proposed swivel-bridge - - - - - - - -	1,570	–	–	6,264	–	–
RUSKEY:						
Swivel-bridge, and difference of enlargement in the canal and lock - - - - - - - - - -	-	-	-	4,603	5	–
JAMESTOWN:						
Two swivel-bridges, and difference of enlargement of canal and lock - - - - - - - -	-	-	-	7,562	–	–
TOTAL Amount of Deductions - - £.				20,329	5	4

	£.	s.	d.
Amount of Estimates from Lanesborough to Lough Allen -	71,603	4	7
Deductions - -	20,329	5	4
£.	51,273	19	3

Thomas Rhodes.

SOUNDINGS of the River *Shannon* from *Portumna* to *Lough Allen*, beginning a little South of the Beacon Pile (the Boundary of the Grand Canal Company); reduced to 16th August 1832; Datum Water 7 feet 6 inches on Upper Sill of Killaloe Lock.

PORTUMNA TO MEELICK.

Col. 1.

Ft.	In.	
10	0	
9	0+	
8	0	Boundary Pile.
7	0	
7	6+	
8	0	
8	0	
9	0+	
10	0	
9	0	
10	0+	
16	0	
12	0	
13	0+	
12	0	
10	0	
11	0+	
11	0	
11	0	
12	0+	
13	0	
13	0	
15	0+	
14	0	
14	0	
14	0+	
13	0	
15	0	
15	0+	
15	0	
16	0	
16	0+	
16	0	
17	0	
18	0+	
21	0	
22	0	
24	0+	
28	0	
38	0	
47	0+	
38	0	
34	0	
29	0+	
22	0	

Col. 2. (with Col. 2. continued)

Ft.	In.	
23	0	
22	0+	
35	0	
37	0	
31	0+	
34	0	
36	0	
40	0+	
41	0	
41	0	
38	0+	
35	0	
29	0	
29	0+	
28	0	
31	0	
31	0+	
28	0	
27	0	
25	0+	
23	0	Portumna Bridge.
22	0	
22	0+	
22	0	
21	0	
21	0+	
26	0	
22	0	
22	0+	
21	0	
21	0	
22	0+	
24	0	
22	0	
21	0+	
17	0	
21	0	
23	0+	
25	0	
24	0	
23	0+	
24	6	
24	0	
23	6+	
24	0	

Col. 3. (with Col. 3. continued)

Ft.	In.	
26	0	
26	0+	
26	0	
26	0	
21	0+	
20	0	
22	0	
18	0+	
19	0	
17	0	
16	0+	
15	0	
16	0	Small Island.
19	0+	
19	0	
18	0+	
20	0	
21	0+	
21	0	
26	0+	
26	0	
28	0+	
35	0	
38	0+	
37	0	
37	0+	
32	0	
30	0+	
35	0	
40	0+	
40	0	
36	0+	
36	0	
28	0+	
24	0	
31	0+	
32	0	
28	0+	
21	0	
17	0+	
12	0	
12	0+	
18	0	
28	0+	
26	0	Opposite. Portland House.

Col. 4.

Ft.	In.	
31	0+	
32	0	
32	0+	
34	0	
40	0+	
40	0	
36	0+	Island.
40	0	
32	0	
27	0	
28	0	
24	0	
23	0	
22	0+	
19	0	
25	0	
30	0	Opposite sharp turn, lower end of Portland Island.
25	0	
35	0	
37	0	
34	0+	
33	0	
40	0	
40	0	
40	0+	
42	0	
35	0	
34	0	
32	0+	
36	0	
40	0	
36	0	
32	0+	
33	0	
30	0	
28	0	
27	0+	
27	0	
21	0	
21	0	
20	6+	
21	0	
21	0	
22	0	
23	0+	

Col. 5. (with Col. 5. continued)

Ft.	In.	
26	0	
26	0	
28	0	
27	0+	
28	0	
27	0	
28	0	
29	0+	
32	0	
31	0	
33	0	
31	0+	
32	0	
28	0	
29	0	
27	0+	
28	0	
24	0	
22	0	
23	0+	
20	0	
18	0	
22	6	
22	0+	
24	0	
22	0	
22	0	
22	0+	
21	0	
24	0	
26	0	
22	0+	
15	0	
18	0	
17	0	
18	0+	
16	0	
24	0	
18	0	
18	0+	
14	0	
18	0	
17	0	
22	0+	
16	0	

Col. 6. (with Col. 6. continued)

Ft.	In.	
21	0	
16	0	
17	0+	
17	6	
17	0	
14	0	
15	0+	
15	0	
19	0	
19	0	
17	0+	
16	0	
17	0	
19	0	
21	0+	
15	6	
18	0	
16	0	
19	0+	
21	0	
29	0	
25	0	
23	0+	
20	0	
28	0	
22	0	
22	0+	
27	0	
24	0	
19	0	
23	0+	
22	0	
19	0	
19	0	
19	0+	
20	0	
22	0	
18	0	
18	0+	
21	0	
22	0	
19	0	
21	0+	
20	0	
19	0	

Col. 7. (with Col. 7. continued)

Ft.	In.	
19	0	
19	0+	
18	0	
14	0	
13	0	
12	0+	
14	0	
14	0	
18	0	
23	0+	
19	6	
20	0	
19	0	
22	0+	
22	0·	
23	0	
19	0	
18	0+	
16	0	
12	0	
12	0	
11	0+	
9	0	White's Ford.
10	0	
9	0	
8	0	
8	0+	
9	0	
11	0	
11	0	
9	0	
8	0	
12	0	
8	6	
11	0+	Upper end of Ballymacegan.
13	0	
15	0	
17	0	
17	0+	
18	0	
17	0	
17	0	
18	0+	
21	0	
20	0	
21	0	
22	0+	
28	6	
28	0	
30	0	
28	0+	
28	0	
28	0	
33	0	

Col. 8.

Ft.	In.
30	0+
31	0
31	0
34	0
28	0+
27	0
24	0
30	0
30	6+
32	0
26	0
24	0
18	0+
25	0
20	0
20	0
18	0+
19	0
16	0
13	0
14	0+
15	0
14	0
16	6
17	0+
22	0
20	0
20	0
20	0+
26	0
27	0
32	0
26	0+
22	0
20	0
19	0
15	0+
17	0
21	0
25	0
20	6+
36	0

South end of Long Island.

PORTUMNA TO MEELICK—*continued.*

Col. 8. *continued.*	
Ft.	In.
26	6
31	0+
32	0
34	0
31	0+
33	0
30	0
35	0+
32	0
34	0
31	0+
31	0
Col. 9.	
29	6
31	0+
21	0
25	0
24	0+
23	0
24	0
25	0+
21	0
31	0
29	6+
32	0
27	0
26	0+
29	0
27	0
28	0+
25	0

Col. 9. *continued.*	
Ft.	In.
27	6
25	0+
31	0
34	0
34	0+
15	0
18	0
23	0+
28	0
26	0
29	6+
29	0
32	0
28	0+
31	0
27	0
26	0+
27	0
30	0
23	0+
22	0
18	0
20	6+
19	0
20	0
19	0+
19	0
20	0
16	0+
16	0
13	0
19	0+
21	0
21	0

Col. 9. *continued.*	
Ft.	In.
19	0+
23	0
23	0
Col. 10.	
23	0+
19	0
22	0
21	0+
26	0
23	0
22	0+
23	0
27	0
28	0+
16	0
37	0
31	0+
27	0
29	0
28	0+
26	0
29	0
29	0+
27	0
30	0
31	0+
31	6
30	0
30	0+
30	6
31	7
35	0+

	Col. 10. *continued.*	
	Ft.	In
	33	0
	32	0
	34	0+
	38	0
	40	0
	43	0+
	44	0
	41	0
	48	0+
	41	0
	38	0
	43	0+
	42	0
	36	6
	33	6+
	25	6
	38	0
	30	0+
	30	0
	22	0
	26	0+
	23	0
	17	0
	32	0+
	32	0
	26	0
	21	0+
	Col. 11.	
	16	0
Beginning of Island.	16	0+
	12	0
	19	0+

	Col. 11. *continued.*	
	Ft.	In.
	23	0
End of Island.	22	0+
	24	6
	27	0+
	23	0
Eyre's Island.	18	0+
	28	0
	17	6+
	16	0
	25	0+
	30	0
	23	0+
	23	0
	23	0+
	19	0
	21	0+
End of Eyre's Island.	18	0
	24	6+
	18	0
	23	0+
	24	0
Friar's Island.	21	0+
	20	0
	22	0
	16	0+
	17	0
	16	0
	16	0+
	13	0
	13	0
	17	6+
	20	0
	21	6
	25	0+

	Col. 11. *continued.*	
	Ft	In.
	29	0
	22	0
	19	6+
	30	0
	28	0
	20	0+
	14	0
	12	0
	18	0+
	21	0
	26	0
	28	0+
	28	0
	23	0
	20	0+
	13	0
	16	0
	Col. 12.	
	14	0+
	21	0
	25	0
	21	0+
	16	0
	17	0
	15	0+
	9	0
	14	0
Lower Brusna River.	7	6+
	6	3
	6	9

Enter Cloonaheenogue Canal.

MEELICK TO BANAGHER.

Col. 13.		
Ft.	In.	
7	0+	Cloonaheenogue Canal. Soundings taken every 50 feet.
4	5+	
4	6	
4	2	
4	3	
4	2+	
4	2	
4	2	
4	4	
4	1+	
4	1	
4	2	
4	5	
4	3+	
4	4	
4	5	
4	5	
4	6+	
4	6	
4	6	
4	3	
4	4+	
4	2	
4	3	
4	5	
4	4+	
4	9	
4	6	
4	6	
5	3+	

	Col. 13. *continued.*		
	Ft.	In.	
	5	4	Cloonaheenogue Canal.
	5	2	
	5	4	
	5	2	
Lower Sill, Hamilton Lock.	4	9+	
Upper Sill.	5	6+	
	6	4	
	6	7	
	5	4+	
	5	7	
	5	7	
	4	10+	
	5	7	
	5	4	
	5	7+	
	5	10	
	5	10	
	6	4+	
	6	1	
	5	10	
	5	7+	
	5	4	
	6	1	
	6	1+	
	6	7	

Col. 14.		
Ft.	In.	
6	1	Cloonaheenogue Canal.
5	7+	
5	7	
5	5	
5	4+	
5	5	
5	5	
5	5+	
5	4	
5	7	
5	7+	
5	7	
5	7	
5	4+	
5	7	
5	4	
5	10+	
5	4	
5	4	
Accommodation Bridge.		
5	4	
5	7	
6	1	
5	10	
5	10+	
5	10	
6	1	
6	1+	
5	5	

Col. 14. *continued.*		
Ft.	In.	
5	5	Cloonaheenogue Canal.
5	11+	
6	1	
6	1	
6	1+	
6	1	
5	7	
5	9+	
5	10	
5	7	
5	9+	
5	9	
5	9	
5	4+	
5	7	
5	10	
5	11+	
5	5	
5	4	
5	11+	
5	11	
6	0	
5	11+	
5	10	
5	10	
5	5+	
5	7	
5	5	

Col. 15.		
Ft.	In.	
5	6+	Cloonaheenogue Canal.
5	9	
5	7	
5	1+	
5	5	
5	1	
5	7+	
5	10	
5	10	
5	7+	
5	3	
5	11	
5	0+	
6	0	
5	4	
5	3+	
5	0	
4	11	
4	10+	
5	3	
5	4	
4	11+	
5	0	
5	1	
5	1+	
5	0	
4	11	
5	3+	
5	3	
4	10	

Col. 15. *continued.*		
Ft.	In.	
Accommodation Bridge.		
5	6	Cloonaheenogue Canal.
5	5	
4	3	
4	11+	
5	3	
5	5	
5	5	
5	5+	
5	9	
5	9	
5	10	
5	9+	
5	8	
5	7	
5	8	
5	9+	
5	11	
5	9	
6	0	
5	5+	
5	6	
5	9	
5	7	
5	9+	
5	7	

(continued)

MEELICK TO BANAGHER—*continued.*

Col. 16.

Ft.	In.	
5	11	
5	5	
5	7+	
5	9	
5	7	
5	5	
5	1+	
5	6	
5	5	
5	10	
5	9+	
5	9	Cloonaheenogue Canal.
5	7	
5	9	
5	5+	
5	5	
5	9	
5	10	
5	10+	
5	10	
5	10	
5	10	
5	7+	
5	5	
5	7	
5	7	
5	5+	
5	4	
5	8	
6	1	
6	1+	
Accommodation Bridge		
5	7+	
5	11	
5	10	
6	4	
5	10+	
Termination of Canal.		
5	9	
6	4	
5	10	
6	4	

Col. 16. *continued.*

Ft.	In.	
6	7+	
8	4	
8	4	
6	4	
6	10	
8	10+	
8	7	
9	7	
9	7	
9	7	
9	1+	
9	1	
6	10	
6	1	
Col. 17.		
6	10	
6	7+	
6	7	
5	10	
6	4	
7	1	
6	7+	
7	4	Small arm of River.
7	4	
7	10	
7	1	
6	4+	
6	7	
7	3	
8	7	
8	1	
6	10+	
9	10	
8	10	
Opens into the River, past the quick turn.		
6	7	
8	7+	
10	1	
9	7+	
9	7	

Col. 17. *continued.*

Ft.	In.	
14	7+	
15	7	
17	7+	
19	7	
19	7+	
16	7	
15	7+	
15	7	
15	7+	
14	7	
13	7+	
13	7	
13	7+	
14	7	
13	7+	
12	7	
13	7+	Opposite turning into Meelick Branch.
14	7	
16	7+	
18	7	
23	7	
12	7+	
19	7	
21	7	
15	7+	
14	7	Small Island on the right.
8	7	
4	7+	
9	7	
9	7	
8	7+	
Col. 18.		
6	7	
6	7	
10	7+	
11	7	
9	7	
10	7+	
9	7	
10	7	
9	11+	Tail of weir, Shannon Grove.

Col. 18. *continued.*

Ft.	In.	
9	7	
9	7	
9	7+	
5	7	
5	7	
9	7+	
10	7	
9	7	
11	7+	
17	7	
11	1	
15	1+	
16	7	Island.
14	7	
17	7+	
23	7	
23	1	
22	1+	
33	7	
35	7	
34	7+	
32	1	
33	7	
33	7+	
35	7	
29	7	
25	7+	
24	7	
24	7	
20	7+	
23	7	
28	7	
27	7+	
25	7	
22	7	
21	7+	
18	7	
15	7	
12	7+	
10	1	
11	7	
12	7+	
13	1	
12	7	

Col. 18. *continued.*

Ft.	In.	
14	1+	
15	7	
19	1	
Col. 19.		
17	7+	
16	7	
14	7	
12	7+	
10	7	
11	1	
10	7+	
14	1	
13	7	
10	7+	
7	7	
16	7	
15	7+	
12	7	
16	7	
15	7+	
17	7	
16	1	
13	7+	
15	1	
13	1	
13	7+	
11	7	
10	7	
17	7+	Small Island.
11	7	
24	7	
20	7+	Small Island on left.
16	1	
12	7	
7	1+	
5	7	
10	7	
12	7+	Beacon on right, and Island of Innishee on left.
14	7	
11	1	
6	7+	
6	7	

Col. 19. *continued.*

Ft.	In.	
13	1	
13	1+	
9	7	
12	7	
13	7+	
13	7	
11	1	
12	7+	
11	1	
10	7	
11	1+	
9	1	
8	7	
10	1+	
10	7	
12	7	
13	7+	
Col. 20—24.		
14	7	Branch to Lake on left
14	7	
15	7+	
16	1	
15	7	
15	1+	Beacon on left, near Lock, in ruins.
12	7	
10	7	
10	1	
8	7+	
7	7	
6	4	
6	7	
6	1+	
6	1	
6	1	
6	1	
6	5+	
5	7	
6	1	
8	1+	
7	4	
6	3*	

* On Lower Sill of Banagher Lock. This Sill is 11 inches below the level of Upper Sill of Hamilton Lock.

BANAGHER TO SHANNON BRIDGE.

Col. 25.

Ft.	In.	
6	9	On Upper Sill of Banagher Lock.
6	3	
6	3+	
6	6	
6	6	
6	6+	
6	6	
6	6	
6	6+	
6	6	
6	6	
6	4+	
6	6	
6	6	
6	6+	
6	6	
6	6	
6	6+	

Col. 25. *continued.*

Ft.	In.	
6	6	
6	3	
6	3+	
6	2	
6	0	
6	0+	
6	0	
5	3	
5	0+	
5	0	
5	0	
5	3+	
5	3	
5	6	
5	2+	
5	0	
5	6	
5	0+	Swivel Bridge.

Col. 25. *continued.*

Ft.	In.	
5	3	
5	9+	
5	9	
5	9+	
5	9	
5	6+	
6	6	
7	0+	North entrance from River.
11	0+	
12	6	
16	0	
12	0+	
9	0	
8	0	
9	0+	
9	0	
10	0	

Col. 26.

Ft.	In.	
9	0+	
10	0	
9	0	
10	0+	
7	0	
6	6	
7	0+	
8	0	
6	6	Between stone Beacons.
6	6+	
7	6	
7	0	
9	0+	Turning to East Channel.
6	6	
10	0	
9	6+	
10	0	
9	0	
9	6+	

Col. 26. *continued.*

Ft.	In.	
9	0	Going again to North.
10	0	
10	0+	
10	6	
10	0	
10	0+	
10	0	
10	0	
10	0+	
9	0	
10	0	
11	6+	
8	6	
7	0	
10	0+	
10	0	
10	0	
10	0+	
12	0	

Col. 26. *continued.*

Ft.	In.	
13	6	
14	0+	
15	6	
15	0	About 30 feet from North shore.
16	0+	
13	0	
10	0	
9	0+	
10	0	
5	0	Grant's Ford.
8	6+	
8	0	
9	0	
9	0+	
11	0	
10	0	
13	0+	

BANAGHER TO SHANNON BRIDGE—*continued.*

Col. 27.

Ft.	In.	
13	0	
11	6	
12	0+	
13	0	
13	0	
12	0+	
13	0	
15	0	
17	0+	
18	0	
12	0	
17	0+	
20	0	
17	0	
19	0+	
19	6	
21	0	
19	6+	
22	0	
23	0	
22	0+	
22	6	
22	0	
22	0+	
21	0	
22	0	
23	0+	
24	0	
24	0	
21	0+	
19	0	
21	0+	
21	6+	
18	6	
20	0+	
20	0	
17	0+	
14	0	
14	0+	
13	0	
12	0+	
11	0	
8	0+	
10	0	Bullock Island.
9	0	
8	0	
8	0+	
6	0	Bullock
8	6+	Ford.
10	0	
11	6+	
12	0	
14	0+	
15	0	
17	0+	

Col. 28.

Ft.	In.	
15	0	
13	6+	
12	0	
10	0+	
7	0	
6	6+	Muns
14	0	Ford.
9	0+	
12	0	
14	0+	
16	0	
16	0+	
14	0	
15	0+	
16	0	

Col. 28. *continued.*

Ft.	In.	
16	6+	
17	0	
17	0+	
22	0	
23	0+	
21	0	
18	0+	
17	0	
17	0+	
18	0	
21	0+	
22	0	
23	0+	
17	6	
20	0+	
9	0	
6	0	
6	6	
6	0	Drawbridge
11	0+	Eastry Island.
7	0	
11	0	
12	0+	
15	0	
17	0	
17	0+	
18	0	
21	0	
27	0+	
24	0	Leahinch Island, West shore.
25	0	
24	0+	
22	0	
24	0	
17	0+	
17	0	
21	0	
20	0+	
18	0	
13	0	

Col. 29.

Ft.	In.	
10	0+	Leahinch.
12	0	
12	0	
9	0+	
9	0	
8	0	
9	0+	
9	0	
8	0	
7	0+	
5	0	
4	5	
5	5+	
6	0	
5	0	
4	5+	
5	5	
4	5	
4	0+	Eel Weir,
4	0	Leahinch.
6	0+	
6	0	
4	0+	
4	0	
6	5+	
9	0	
11	0+	
11	0	
17	0+	West
16	0	Branch.

Col. 29. *continued*

Ft.	In.	
15	0+	Mid-channel.
17	0	
20	0+	
20	0	
20	0+	
18	0	
20	0+	
25	0	
25	5+	
25	0	
25	0+	
23	0	
20	0+	
20	0	
21	5+	
23	0	
22	0+	
22	0	
19	0+	
21	0	
22	0+	
23	5	
20	0+	
15	0	
17	0+	

Col. 30.

Ft.	In.
22	0
21	0+
22	0
23	0+
23	0
18	0+
18	0
16	0+
15	0
16	5+
19	0
21	0+
22	0
23	0+
21	0
21	0+
21	6
25	0+
24	0
22	0+
21	0
19	0+
20	0
21	0+
17	0
16	0+
15	0
13	0+
12	5
11	5+
13	0
12	0+
11	0
12	0+
12	5
12	0+
10	6
10	0+
9	0
7	0+
7	0
8	0+
9	0
8	0+
7	0

Col. 30 *continued.*

Ft.	In.
8	6+
8	0
8	0+
8	0
7	0+
8	0
7	6+
7	0
7	0+
6	6

Col. 31.

Ft.	In.	
6	0+	
5	0	Broken
7	0	stone
6	0	Beacon.
7	0+	Derry-holmes.
6	0	
6	0	
7	0	
6	0+	
6	5	
7	5	
6	0	
5	0+	
6	0	Stone
6	5	Beacon.
6	0	
6	0+	
6	5	
6	0	
6	5	Stone
6	0+	Beacon.
6	5	
6	0	
4	0	Stone
3	0+	Beacon.
3	0	
6	0	
7	0	
6	5+	
5	0	
6	5	
6	5	
7	5+	
9	0	
11	0+	
12	0	
9	0+	
7	0	
4	0+	
6	5	
9	0+	
10	0	
12	0+	
13	0	
12	5+	
12	0	
14	0+	
15	5	

Col. 32.

Ft.	In.
15	5+
15	0
17	5+
16	0
19	0+
22	5
20	0+
21	0

Col. 32. *continued.*

Ft.	In.
25	0+
27	0
25	0+
23	0
20	5+
16	5
17	0+
17	0
16	5+
16	0
16	0+
16	0
15	0+
15	5
15	5+
12	0
13	0+
11	0
12	0+
13	0
14	5+
15	0
16	5+
12	5
11	5+
14	0
14	0+
15	5
15	0+
15	0
14	5
13	0
13	0+
13	5
14	5
14	0
13	0+
13	0
14	0
14	0

Col. 33.

Ft.	In.	
15	0+	
12	0	
13	0	
16	0	
18	0+	
15	0	
10	0	
10	0	
6	5+	Branch up the Old Weir.
7	0	
7	0	
6	0	
6	5+	
7	0	Bishop's Islands.
7	5	
7	0	
6	0+	
7	0	
6	0	
4	0	
6	0+	
5	5	
6	0	Turning
7	0	up Cut or
6	5	open Canal.
6	5+	
6	2	
6	5	
7	0	
6	5	

Col. 33. *continued.*

Ft.	In.	
7	0+	Short Cut at Bishop's Islands, in which the water flowed at the rate of 2 feet 10 inches per second.
6	5	
6	5	
6	8	
6	8	
7	0+	
6	8	
6	8	
6	5	
6	8	
6	5+	
6	8	
6	8	
6	8	
6	8	
6	8+	
6	8	
6	5	

Col. 34.

Ft.	In.	
6	0	River
7	0	again.
5	5+	
8	0	
10	2+	
9	0	
10	0+	
11	2	
11	5+	
8	0	
8	0+	
8	2	
9	0+	
9	2	
9	0+	
9	0	
10	0+	
9	2	
11	0+	
10	2	
8	5+	
7	8	
9	0+	
9	8	
10	2+	
11	0	
9	8+	
7	8	
9	0+	
11	0	
10	8+	
9	5	
6	0+	
8	0	
7	5+	
12	8	
12	0+	
13	0	
10	5+	
11	8	Garry-
13	0+	more.
11	0	
9	0+	
7	0	
10	5+	
9	0	
8	0+	
7	5	

(*continued*)

BANAGHER TO SHANNON BRIDGE—*continued.*

Col. 35.			Col. 35. *continued.*			Col 35. *continued.*			Col. 36. *continued.*			Col. 36. *continued.*			Col. 36. *continued*		
Ft.	In.		Ft.	In.		Ft.	In.		Ft.	In.		Ft.	In.		Ft.	In.	
7	5+		4	2+	Ford.	14	0+		24	0+		6	0	River again.	5	0	Canal and tail of Lock.
7	0		4	8		15	0		21	0		5	0		5	0	
8	0+		5	2+	Stone Beacon.	16	0+		23	5+		24	0+		4	8	
7	5		3	5		16	5		24	0		24	0		5	2	
6	0+		4	2+		17	0+		24	0+		17	0		4	8	
5	5		5	2		17	5		20	0		13	5+		4	8	
6	5+		8	0+		17	5+		20	5+		13	0		5	2	
8	8		7	2		17	5		21	5		12	0		5	8	
7	5+		7	0+		18	5+		11	5+		7	0+		6	0	
7	5		7	0		18	5		5	0	Cut or open Canal to shorten the distance.	7	5		5	8	
7	2+	Ruined Stone Beacon.	9	0+		20	0+		7	5		8	0		5	5	On Lower sill of Lock at Shannon Bridge.
8	2		8	5		20	5		6	5+		6	0+				
8	0+		9	0+					6	0		5	0				
9	5		9	8					5	0		5	5				
11	0+		11	2+		Col. 36.			5	0+		6	5+				
8	5		13	2		20	0+		6	0		12	0				
8	2+		14	8+		21	0		6	0		7	5				
7	0		18	0					5	5+		7	0+				

SHANNON BRIDGE TO ATHLONE.

Col. 37.			Col. 37. *continued.*			Col. 38. *continued.*			Col. 89. *continued.*			Col. 40. *continued.*			Col. 40. *continued.*		
Ft.	In.		Ft.	In.		Ft.	In.		Ft.	In.		Ft.	In.		Ft.	In.	
Rise of Lock at Shannon Bridge, 7½ inches.			20	6+		23	0	Iron Pile.	12	0+	Chrisaun Ford.	12	6		30	0	
5	4	On Upper Sill.	20	6		18	0+		11	6		12	0		27	5+	
5	0		23	0+		14	6		8	0		12	0		24	5	
4	6+		25	6		12	6+		8	6		12	6+	Branch E. side.	22	5+	
4	3		27	6+		16	6		7	0		15	0		24	5	
4	6+		26	6		18	6+		12	0		19	0		27	5+	
4	9		30	6+	Arm on the left to Coppagh Leitragh.	17	6		15	0+		18	0		27	0	
6	6+		26	6		21	6+		13	6		21	0		26	0+	
6	6		27	6+		21	0		16	0	Enter branch on the West.	24	0		Col. 41.		
20	6+	Lamb Island, on the West side.	27	6		7	6+	Gravel bottom.	11	6		19	6+		26	0	
24	6		Col. 38.			8	6		6	6		8	0		26	0+	
35	6+		27	6+		12	6+		7	0		7	0	Ballynatave Castle on West side, and Ford on East side.	26	5	
29	6		28	6		13	0	Chrisaun Ford.	9	6+	Devenish Island on the East.	6	0		28	5+	
11	6+		31	6+		6	0		5	6		5	3		27	0	
15	0		39	6		5	6		7	0		6	6		27	5+	
9	6+		40	0+		6	0		11	0		7	6+		30	0	
8	0		38	6		6	3		8	6+		8	3		21	5+	
12	0+		34	6+		7	9+		7	6		7	3		22	0	
10	6		25	6		8	6		7	6		6	9		21	5+	
11	6+		24	0+		7	9		10	3		5	9		23	0	
20	0		19	6		6	6		12	6+		5	3		14	0+	
25	6+		18	0+		5	6		12	6		5	9+		20	0	
26	6		21	6		5	0		13	6		6	3		14	0+	
27	6+		25	6+	Iron Pile.	9	9+		8	6		7	3		15	0	
28	0		23	6		Col. 39.			8	0+		6	9		14	6+	Single Weir.
28	6+		20	6+		10	0	Chrisaun Ford.	6	6		6	6		15	0	
29	6		18	6		10	6		7	0		7	0		20	5+	
31	6+		17	6+		10	6		5	0		6	9+		10	0	
34	6		17	6		7	3		8	6+		7	3		15	5+	
38	6+		19	6+		6	3		11	0		6	6		22	5	
44	6		20	6		7	6+		10	6		6	3		24	5+	Channel.
47	6+		20	0+		7	6		14	6		8	3		26	5	
46	6		20	0		7	9		15	0+		6	6		27	0+	
40	0+		21	6+		8	9		12	0		6	6+		29	0	
36	6		17	6		11	0		11	6		8	6		27	0+	
29	6+	Iron Pile	17	6+		11	6		12	6		6	9		25	0	Wide
26	0		16	0		11	6+		13	0+		7	3	Blind cut on right.	24	0+	
25	6+		19	6+		9	6		10	0		7	9		24	5	
24	6		23	0		13	0		Col. 40.			8	3		24	5+	
24	6+		21	0+		15	6		13	0		11	6+		24	0	
24	0		24	0		13	0		13	0		8	0		23	5+	Line
23	0+		28	0+		11	0		11	6+		14	0	Iron Pile West.	23	0	
22	0											15	0	Main Line of River.	23	5+	
												26	0+	Sharp turn.			

Shannon Bridge to Athlone—*continued.*

Col. 41. *continued.*		
Ft.	In	
22	5	
24	0×	
23	5	
20	5×	Fine Wide Channel.
19	0	
18	0×	
17	5	
18	5×	
18	0	
19	5×	
18	0	
19	5×	
18	0	
17	0×	
17	0	
17	0×	
18	0	
18	5×	
19	5	
21	5×	
19	0	
Col. 42.		
19	0×	
20	5	
19	5×	
20	0	
19	0×	
20	0	
19	0×	
17	5	
15	0×	
14	5	
13	0×	
12	0	
11	0×	Channel.
10	5	
10	0×	
11	0	
9	5×	
9	5	
9	0×	
9	0	
8	0×	
11	5	
13	0×	
14	0	Iron Pile, nearly covered in winter.
15	0×	
16	0	
17	5×	Fine Wide
18	5	
17	5×	
16	0	
16	0×	
17	0	
17	0×	
16	0	
16	5×	
17	0	
16	5×	
17	0	
16	5×	
18	0	
18	0×	
18	5	
18	5×	
19	0	
19	5×	
19	0	
17	5×	
18	0	

Col. 42. *continued.*		
Ft.	In.	
17	0×	
17	0	
16	5×	Remains of Wood Pile.
15	0	
12	0×	
13	0	
11	0×	
Col. 43.		
12	0	Seven Churches.
12	0×	
13	0	
14	0×	
15	0	
17	6×	
20	6	
27	0×	Sharp angle.
32	6	
38	6×	
20	6	
19	0×	
22	6	
40	6×	
42	0	
37	6×	
34	6	
26	0×	Iron Pile.
20	0	
27	6×	
26	6	
25	0×	
24	0	Iron Pile.
19	6×	
35	6	
35	0×	
33	0	
31	6×	
33	6	
35	0×	
31	6	
24	6×	
24	0	
23	6×	
22	6	Iron Pile.
18	6×	
22	6	
20	6×	
21	6	
22	0×	
17	6	
14	6×	
15	6	
13	6×	
14	0	
15	6×	Iron Pile.
14	6	
14	0×	
12	6	
11	6×	
10	6	
8	6×	
8	6	
9	6×	
12	0	
14	0×	
Col. 44.		
14	6	
14	0×	
12	0	

Col. 44. *continued.*		
Ft.	In.	
11	0×	
8	6	
8	6×	
8	0	
8	3×	Iron Pile.
8	0	
7	0×	
7	0	
6	0×	
4	9	
4	6×	Ford.
7	0	
7	0×	
5	9	Swing Pile.
7	6×	
6	3	
6	9×	Tullymore
7	3	
7	3×	
7	6	
7	0×	Large Iron Pile.
7	6	
7	0×	
7	6	
8	0×	
6	6	
6	6×	
7	0	
8	6×	
6	6	
11	0×	
11	6	
12	6×	
11	6	
12	0×	
12	0	
12	0×	
13	6	
14	0×	
14	6	
14	0×	
14	6	
14	6×	
14	6	
13	6×	
14	0	
10	0×	
8	0	
7	6	
6	6×	
7	0×	
6	9	Iron Pile.
7	0×	
Col. 45.		
7	3	Calf Island, Western Channel. 10 0 10 0 9 0 9 0 8 0 10 0 14 0 18 0 10 0 21 6 22 6 22 0 19 0 18 0 16 0 16 0 16 0 18 0 20 0 21 6 24 0 26 0 24 0 25 6 26 6 24 0 Soundings in East Channel, Calf Island, the Main Channel, but not hitherto navigated.
7	3	
8	0×	
8	6	
9	3	
11	0×	
12	6	
12	6	
14	0×	
14	0	
13	0	
18	0×	
20	6	
24	6	

Col. 45. *continued.*		
Ft.	In.	
23	6×	Calf Island, Western Channel. 21 6 28 6 31 0 30 6 31 6 30 0 32 6 29 0 31 0 32 0 33 6 30 6 25 6 27 0 28 0 21 0 Soundings in East Channel, Calf Island, the Main Channel, but not hitherto navigated.
19	0	
14	6	
14	6×	
18	6	
18	0	
19	6×	
19	6	
16	6	
17	6×	
20	0	West End.
20	6	Ward's
6	0×	Creek.
6	6	
7	6	
7	6×	Iron
6	6	Pile
25	6	In river
27	6×	again.
27	6	
27	6×	
29	6	
29	6×	
27	6	
26	6×	
23	6	
23	6×	
19	6	
22	6×	
24	6	
24	0×	
25	0	
24	0×	
24	0	Iron
21	6×	Pile
22	6	
24	6×	
26	6	
23	6×	
19	6	
18	6×	
19	0	
Col. 46.		
20	6×	
21	0	
21	6×	
22	6	
24	6×	
27	0	
29	6×	
30	0	
28	0×	
27	0	
23	6×	
25	6	
24	0×	
23	6	
22	6×	
19	6	
18	0×	
20	6	
21	6×	
21	6	
18	0×	
16	6	
15	6×	
14	6	Iron Pile, sharp turn
20	6×	
19	6	
11	6×	
9	0	

Col. 46. *continued.*		
Ft.	In	
13	6×	Iron Pile turning up West Channel.
14	0	Long Island.
14	0×	
13	6	
14	6	
15	6×	
16	0	
11	6	
4	6×	
6	6	
8	6	
7	6×	
10	6	
12	6	
9	6×	
10	6	
7	6	
11	6×	
11	6	
11	0	
12	6×	
12	6	
13	0	
12	0×	
13	6	
14	6	
17	0×	
16	0	
Col. 47.		
15	0	Long Island. 13 6 15 0 16 6 13 6 12 6 11 6 14 0 16 6 19 0 20 0 18 6 18 0 20 0 21 0 18 0 18 6 19 6 26 6 25 0 23 0 21 0 19 0 18 0 19 6 20 6 23 0 23 0 21 0 22 6 25 6 26 6 26 0 27 0 22 0 14 6 11 6 8 6 11 0 17 0 19 6 22 0 22 6 20 6 20 6 21 6 20 6 20 0 19 6 20 0 19 6 18 6 17 6 16 6 16 6 16 6 16 0 16 6 17 0 17 0 17 0 17 6 17 0 18 0 17 0 15 14 6 Soundings in East Channel of Long Island. Wide part.
14	6×	
13	6	
12	6	
14	6×	
14	6	
15	6	
16	0×	
16	0	
17	0	
17	6×	
18	6	
20	0	
23	0×	
26	6	
19	6	
11	6×	
11	0	
12	6	
11	6×	
9	0	
8	6	
10	3×	
6	6	
11	3	
14	6×	
7	6	
7	6	
4	6×	
5	0	
5	3	
4	3×	
3	9	
3	3	
3	9×	
3	6	

Col. 47. *continued.*		
Ft.	In.	
3	9	Long Island. 14 0 14 0 17 0 21 0 26 0 27 6 31 6 27 6 26 0 22 0 16 0 15 0 10 0 19 0 20 6 22 0 23 0 22 6 21 6 14 6 15 6 11 6 10 6 18 6 26 0 20 6 24 0 21 6 20 0 16 6 15 6 12 0 13 0 12 0 11 0 13 0 15 6 16 0 14 6 10 6 18 0 20 0 21 0 Soundings in East Channel of Long Island. Branch on left. Joins the West Branch again.
4	9×	
6	3	
5	3	
5	6×	
5	3	
5	3	
5	6×	
6	0	
5	0	
4	6×	
6	3	
10	6	
15	0×	
13	0	
11	6	
9	6×	
11	6	
13	6	
13	0×	
Col. 48.		
14	0	
12	6	
13	0×	Long Island.
12	0	
10	0	
14	0×	
14	0	
17	6	Iron Pile.
18	6×	
19	6	In the main River.
21	6	
19	6×	
24	6	
22	6×	
16	6	
11	6×	
7	6	
8	0×	
19	0	
22	6×	
25	6	
23	0×	
21	6	
16	6×	
17	0	
23	0×	
23	6	
24	6×	
30	0	
29	6×	
24	6	
21	0×	
28	0	
26	6×	
25	0	
25	6×	
26	6	
25	0×	
23	0	
22	0×	

H 2

(continued)

SHANNON BRIDGE TO ATHLONE—*continued*

Col. 48. *continued.*

Ft.	In.	
20	0	
18	6+	
17	6	
16	6+	
12	0	
12	6+	Large Iron Pile.
9	0	
9	6+	
9	6	
11	6+	
15	0	
18	6+	
22	6	
22	0+	
22	6	
23	6+	

Col. 49.

Ft.	In.	
26	6	
24	0+	
22	6	
19	6+	
17	6	
16	0+	
18	6	
23	0+	
24	6	
24	0+	
15	0	
14	6+	
23	6	
20	6+	
20	0	
20	6+	
19	0	
19	6+	
22	6	
25	0+	
28	0	
25	0+	
20	0	
12	6+	
11	0	Rann Island.
7	6	
8	0	
11	6	
12	6+	
12	6	
12	6	
17	6	
16	0	
13	6+	
12	6	
12	6	
11	6	

Col. 49 *continued.*

Ft.	In.	
11	6	Rann Island.
9	6+	
13	0	
15	6	
14	0	
5	6+	
11	0	
12	0+	
15	0	
15	6+	
16	0	
14	6+	
16	0	
17	6+	
15	0	
17	0+	
17	6	
17	0+	

Col. 50.

Ft.	In.	
17	0	
17	0+	
17	0	
17	6+	
19	0	
21	6+	
23	6	
26	0+	
23	6	
26	6+	
23	6	
20	6+	
26	6	
28	0+	
28	6	
30	0+	
29	6	
29	0+	
29	0	Iron Pile.
30	0+	
30	0	
30	6+	
23	0	
19	6+	
20	6	
19	0+	
15	6	
8	0+	
10	0	
15	6+	
19	0	
14	0+	
15	0	
18	0+	
7	6	Iron Pile.
6	6+	

Col. 50, *continued.*

Ft.	In.	
13	0	
18	0+	
20	6	
22	0+	
24	0	Iron Pile.
30	6+	
32	6	
32	6+	
30	6	
30	6+	Opposite Entrance of Canal.
24	6	
21	0+	
17	0	
19	0+	
5	0	

Enter the Athlone Canal.

Col. 51.

Ft.	In.
4	3+
4	6
4	9+
4	6
4	6+
4	6
4	6
4	6+
4	3
4	3
4	6+
4	3
4	6
4	3+
4	6
4	3
4	3+
4	6
4	0
3	9+
3	6
3	6
3	9+
3	9
3	9
4	0+
4	0
3	9
5	3+
5	6
5	0
5	0+
5	0
5	0
5	3+
5	0
5	3

Col. 51. *continued.*

Ft.	In.	
5	3+	
5	9	
5	3	
4	9+	
5	0	On Lower Sill of Lock.
6	6	
6	0	
5	0	On Upper Sill of Lock.
5	0+	
3	9	
4	6	
4	9+	
4	9	
5	3	
5	6+	
5	9	
5	6	
4	6+	

Col. 52.

Ft.	In.
4	9
4	6
4	0+
4	0
4	9
4	0+
4	6
5	0
5	3+
4	9
5	6
5	6+
5	6
5	6
5	6+
5	6
5	9
5	6+
5	9
5	6
5	6+
5	6
5	6
5	6+
5	3
5	0
5	6+
5	3
5	3
5	6+
5	6
5	3
5	9+
5	6
5	6

Col. 52. *continued.*

Ft.	In.
6	0+
5	9
6	0
6	0+
5	9
5	3
5	6+
6	6
5	9
6	0+
6	0
6	0
6	0+
5	9
5	9
5	9+
5	9
6	0
5	9+
6	0

Col. 53.

Ft.	In.	
6	0	
5	9+	
5	6	
5	6	
5	0+	
5	0	
5	6	
5	3+	
6	0	
6	3	Opposite the pile at upper end of Canal.
18	0+	Enter River.
17	6	
18	0+	
19	0	
19	6	
20	6+	
20	6	
21	0	
21	0+	
20	6	
20	6	
21	6+	
21	6	
23	0	
23	6+	
26	0	
27	0	
22	6+	
17	6	
13	6	

Col. 53. *continued.*

Ft.	In.	
14	0+	
19	0	
18	6	
25	6+	
23	6	
24	0	
24	0+	
24	6	
23	0	
18	6+	
18	0	
17	6	
17	6+	
17	6	
16	6	
18	6+	
16	0	
15	0	
14	6+	
14	0+	
14	0+	
14	0+	
9	0+	Upper Weir before entering Lough Ree.
11	6	

Col. 54.

Ft.	In.	
11	6+	
11	6	
12	0+	
12	6	
12	6+	
13	0	
13	0+	
13	0	
13	0+	
11	0	
10	0+	
11	0	
12	0+	
13	6	
15	0+	
17	6	
20	0+	
17	6	
15	0+	
16	6	
14	0+	
17	6	
18	6+	
20	0	
16	0+	
12	0	
11	0+	
10	0	Lough Ree.

LANESBOROUGH TO TARMONBARRY.

Col. 55.

Curreen Point, near Lanesborough.

Ft.	In.
5	10+
5	7
4	4
3	7

*5 6
4 6
4 4
4 1
4 3
4 0
4 6

Col. 55. *continued.*

Ft.	In.
3	10+
3	10
3	10
3	10
4	1+
3	10
3	10

*4 0
4 0
4 6
4 9
4 9
5 3
5 6
5 6
5 0
4 3

Col. 55. *continued.*

Ft.	In.
4	1
4	4+
4	7
4	4
4	4
4	1+
4	7

*4 6
5 9
5 0
5 0
4 9
5 0
5 3
5 3
5 6
6 6
5 9

Col. 55. *continued.*

Ft.	In.
4	7
4	7
5	1+
4	10
4	4
3	7
3	10+

*5 0
5 0
5 0
5 6
4 0
4 3
4 0
4 6
4 3
4 3
4 3

Col. 55. *continued.*

Ft.	In.
6	7
6	10
6	7
6	7+
6	4
6	10

*4 6
3 9
4 6
3 6
4 3
3 9
3 9
3 3
4 6
3 3
3 0

Col. 55. *continued.*

Ft.	In.
7	1+
7	1
7	1
7	7
7	10+
7	10
7	7

*2 9
2 6
2 3
2 6
1 9
1 9
1 9
1 9
1 6
1 6
1 6

---

* Soundings taken along the proposed, or more direct line, from Curreen Point to Lanesborough Canal.

LANESBOROUGH TO TARMONBARRY—*continued.*

Col. 55. continued. Ft.	In.
7	10
7	7×
7	1
7	4
7	10
8	1×
7	7
6	10
6	7
6	10×
6	7
6	7
7	1
8	10×

Col. 56. Ft.	In.
6	10
6	10
6	4
4	1×
4	4
6	4
7	4
6	4×
5	10
5	7
5	4
4	10×
4	1
4	10
5	4
5	1×
5	4
4	10
6	10
6	10×
6	10
7	10
8	4
8	4×
7	10
7	10
7	10
7	10×
7	10
7	10
8	4
8	4×
8	4
7	10
8	4
7	10×
8	10
7	10
7	10
7	10×
7	10
7	10
7	10
7	10×
7	10

Soundings taken along the proposed, or more direct line, from Curreen Point to Lanesborough Canal

Ft.	In.
1	3
1	3
1	3
1	3
1	11
1	0
1	11
1	0
1	3
1	4
1	3
1	3
1	9
1	3
1	3
1	3
1	6
1	6
1	0
1	11
1	9
1	9
1	11
2	3
2	7
2	11
2	1
2	0
2	6
3	6
3	9
3	11
3	6
2	8
2	11
5	9
7	3

In small Length, in a direct line with the Canal.

Soundings taken along the proposed, or more direct line, from Curreen Point to Lanesborough Canal

Ft.	In.
6	9
7	0
7	0
7	6
7	6
7	0
7	6
7	3
7	0
7	0
7	11
7	0
7	3
7	11
8	5
8	9
12	0
13	11
14	11
15	0
18	0
18	0
19	11
20	11
20	11
21	0
22	11
22	0
22	0
22	0
22	11
22	0
20	0
22	0
22	0
23	11
23	0
23	0
24	0
24	0
22	0
22	0
22	0
20	0
19	0
18	0
17	0
14	0
13	0
11	11
9	0
8	0
7	9

Canal Pier heads.

Col. 56. continued. Ft.	In.
8	10
9	4
9	4×
9	10
9	10
9	10
11	10×
22	0
20	0
20	6

Col. 57. Ft.	In.	
19	0×	
18	0	
15	6	
15	0	
15	0×	
15	0	
15	0	
13	6	
15	0×	
10	6	
10	6	
11	0	
13	0×	
13	0	
14	0	
13	6	
15	0×	
16	6	
18	0	
20	0	
20	6×	
19	0	
18	0	
19	6	
19	0×	
19	0	
19	6	
18	0	
15	6×	
15	0	
14	0	
13	0	
10	6×	
8	0	
6	4	
5	10	
4	10×	Enter the Lanesborough Canal.
4	10	
3	10×	Pier heads.
4	1	
4	1×	Lanesborough Canal Soundings taken every chain.
4	2	
4	1×	
4	1	
4	4×	
4	3	
4	4×	
3	10	
4	7×	Lower Sill.
4	4	Upper Sill.
3	7×	
3	8	
2	9×	
3	11	

Col. 58. Ft.	In.	
4	0×	Canal
3	10	
3	10×	
4	9	
4	6×	
7	4×	
6	10	
6	4	
9	4×	
7	10	
8	10	
8	10×	
9	4	
9	4	
7	10×	
6	10	
7	10	
13	0×	
13	0	
12	6	
12	0×	
12	0	
12	0	
12	0×	
13	0	
14	0	
14	6×	
13	6	
13	0	
13	0×	
12	6	
13	0	
13	0×	
14	0	
15	0	
15	6×	
15	0	
15	0	
14	0×	
14	0	
14	0	
13	6×	
13	0	
12	6	
12	0×	
11	6	
11	0	
10	6×	
10	0	
10	0	
9	4×	Cloonbunny.
10	0	
8	10	
8	4×	

Col. 59. Ft.	In.
7	10
9	4
10	0×
9	4
10	0
10	0×
10	0
10	6
11	0×
11	6
12	0
12	0×
11	6
11	6
11	6×
11	0

Col. 59. continued. Ft.	In.	
11	0	
10	6×	
10	0	
10	6	
10	6×	
10	6	
10	6	
11	0×	
11	6	
12	0	
12	6×	
12	6	
13	0	
13	0×	
13	6	
14	0	
14	0×	
13	6	
13	6	
13	6×	
14	0	
14	0	
14	0×	
14	0	
14	6	
14	6×	
14	6	
14	6	
14	6×	
14	6	
14	6	
14	0×	
14	0	
13	6	Bending
14	0×	
14	0	
13	6	
13	0+	
13	0	

Col. 60. Ft.	In.	
12	6	
12	6×	
12	6	
12	6	
13	0×	
13	0	
13	6	
14	0×	
14	6	
15	6	
16	0×	
17	0	
18	0	
19	6×	
20	6	
21	0	
22	0×	
22	0	
21	6	
21	0×	
20	0	
20	6	
20	0×	Kilnacarragh Point.
20	0	
20	6	
20	6×	
22	0	
21	6	
20	6×	
20	0	
20	6	

Col. 60. continued. Ft.	In.	
19	0×	
21	6	
19	6	
16	0×	
12	0	
16	6	
18	6×	Island on East side.
18	6	
19	0	
17	6×	
12	6	
12	6	
10	0×	
10	0	
10	6	
12	0×	
12	0	
8	6	
6	4×	
5	10	
7	4	
8	4×	
8	10	
9	10	

Col. 61. Ft.	In.	
10	10×	
9	10	
8	10	
8	4	Sharp turn.
9	4	
9	4	
9	1×	
8	7	
7	10	
6	4×	
5	7	Kilnacarragh Ford begins.
5	10	
5	10	
4	7×	Usual Sailing Course.
4	10	
4	7	
3	4	
3	4×	
3	10	
3	7	
3	10	
4	1×	
3	7	
4	1	
4	1	
3	4×	
3	7	
3	10	
3	10	
3	7×	
4	1	Wooden pile.
3	10	
4	7	Kilnacarragh Ford ends.
6	4×	
6	7	
7	4	
8	4×	
11	4	Fine Wide Channel.
15	4	
18	0×	
19	4	
18	4	
17	0×	
14	4	
14	0	
13	0×	

Col. 61. continued. Ft.	In.	
11	0	
10	0	
7	10×	Fine Wide Channel.
8	10	
7	7	
7	1×	
5	10	
6	1	
5	4×	
5	1	

Col. 62. Ft.	In.	
4	7	
4	4×	
4	1	
3	4	
3	7×	
3	10	
4	10	
5	1×	
5	4	Island on the East side.
5	10	
5	7×	
6	4	
6	1	
7	4×	
7	7	
7	7	
8	1×	A Stone.
4	10	
7	4	
7	7×	
8	1	
8	7	
8	4×	
7	7	
8	4	
8	7×	
8	1	
8	10	Wide Channel.
7	10×	
9	1	
9	1	
9	10×	
9	10	
8	4	
9	10×	
10	4	
11	4	
10	10×	
11	4	
11	4	
11	10×	
10	10	
11	4	
9	10×	
8	10	
8	4	
7	7×	
6	7	
6	4	
6	4×	Errogh Ford.
5	4	
5	1×	
4	7×	
4	7	
4	4	
3	10×	

(continued)

LANESBOROUGH TO TARMONBARRY—*continued*.

Col. 63.

Ft.	In.	
4	4	Length Ford, Shallow about 300 yards in length.
4	1	
3	10×	
4	1	
4	1	
3	10×	Stump.
3	10	
4	1	
4	7×	
5	1	
5	4	
5	10×	
6	7	
6	7	
6	10×	
6	10	
7	1	
5	4×	
6	4	
8	4	
8	7×	
8	7	
8	1	
6	10×	
7	1	
7	10	
8	1×	
9	4	
7	7	
8	10×	Turning.
9	7	
11	1	
14	4×	
18	0	
19	0	
19	4×	
13	10	
18	10	
17	4×	
16	4	
13	10	
11	4×	
7	10	
8	10	
8	4×	
6	7	
6	4	
4	10×	Cloonberla Shoal, about 500 yards in length.
6	4	
6	4	
5	10×	
5	1	
4	7	
4	4×	
3	7	
4	1	

Col. 64.

4	4×	Cloonberla Shoal.
4	4	
3	4	
4	7×	
4	10	
4	7	
6	4×	
8	10	
10	7	
10	7×	
10	10	
8	10	
9	7×	
9	1	
8	4	

Col. 64. *continued.*

Ft.	In.	
5	10×	
5	10	
4	7	
4	1×	
5	1	
7	7	
9	1×	
7	1	
9	10	
11	1×	
10	1	
14	4	
15	10×	
16	4	
17	4	
18	0×	
18	0	
18	0	
18	4×	
17	0	Fine Wide Channel.
16	0	
15	4×	
15	0	
16	0	
18	0×	
19	0	
19	0	
19	4×	
18	0	
19	0	
14	4×	
10	4	
10	4	
9	7×	
8	10	
8	10	
8	10×	
8	1	
8	7	Small Island about two feet under water.
6	4×	
8	4	

Col. 65.

8	7	
9	4×	
9	7	
10	4	
9	10×	Fine Wide Channel.
10	10	
11	10	
12	10×	
13	4	
14	0	
14	4×	
14	4	
15	0	
15	0×	Derryhanuy.
15	4	
16	4	
14	4×	
14	4	
15	0	
14	4×	
14	4	
14	4	
15	0×	
14	4	
15	0	
15	0×	
15	4	
15	4	
15	4×	
15	4	

Col. 65. *continued.*

Ft.	In.	
15	4	
16	0×	
16	4	
16	0	
16	4×	
17	0	Fine Wide Channel.
16	4	
16	4×	
15	0	
14	4	
14	0×	
14	4	
14	0	
13	4×	
13	0	
12	4	
13	0×	
12	4	
12	4	
12	4×	
11	4	
9	10	
10	10×	
9	4	
9	4	
9	4×	

Col. 66.

8	10	
8	4	
7	4×	
6	7	
4	7	
7	10×	
8	10	
8	7	
7	10×	
8	10	
9	1	Fine Wide Channel.
9	1×	
9	1	
8	4	
7	7×	
7	1	
6	7	
6	4×	
8	1	
9	1	
9	7×	
10	1	
10	1	
10	10×	
10	7	
11	7	
12	1×	
12	4	
12	10	
13	4×	
14	4	
14	10	
15	4×	
14	10	
14	4	
15	4×	
15	4	
15	4	
15	4×	Feuris river, w st side.
13	10	
13	4	
13	4×	Cloonoe.
13	10	

Col. 66. *continued.*

Ft.	In.
13	4
12	10
12	10×
11	10
10	4
9	4
9	4×
9	4
9	10
9	10
9	10×
8	4
7	4

Col. 67.

7	4	
7	1×	
7	1	
7	1	
7	1	
6	10×	
6	10	
7	7	
6	7	
6	7×	
6	7	
6	4	
5	10	
6	1×	
6	1	Sharp bend.
5	10	
5	4	
6	1×	
6	1	
6	4	
6	7	
7	1×	
7	1	
7	7	
7	7	
7	4×	
7	4	
7	1	
6	7	
6	10×	
6	10	
6	10	
6	10	
7	4×	
7	7	
7	7	
8	1	
6	1×	

Col. 68.

9	1
9	3
10	4
11	10×
12	1
11	4
3	7
10	4×
11	1
11	4
10	7
10	4×

Col. 68. *continued.*

Ft.	In.	
9	4	
8	1	
6	7	
6	7×	
5	10	
4	4	
3	7	
4	7×	
4	4	
4	4	
4	4	
4	4×	
4	7	
4	7	
4	1	
4	10×	
4	4×	Enter Lodge Cut.
4	4	
4	7	
4	4	
4	1	
3	10	
3	7	
4	1	
4	4×	
4	4	

Col. 69.

4	7	
4	4	
4	7	
4	4	
4	4	
4	4	
4	1×	
4	1	
3	7	
3	10	
4	1	
4	1	
3	10	
4	1	
3	10×	Lodge Cut.
4	1	
3	10	
4	1	
4	1	
3	10	
3	10	
4	1	
4	1×	
4	1	
4	1	
4	4	
4	4	
4	4	
4	4	
4	7	
4	7×	
3	10	
3	10	
3	7	
3	10	
3	10	
3	10	

Col. 70.

Ft.	In.	
3	10×	
3	10	
3	10	Lodge Cut.
3	10	
3	10	
3	10	
3	10	
3	10	
3	10×	
3	7	
3	7	
3	7	
3	10	
3	7	
3	7	
3	10	
3	10×	
3	7	
3	10	
3	10	
3	7	
3	10	
4	1	
4	1	
4	1×	
4	1	
4	1	
3	10	
4	1	
4	1	
3	10	
3	10×	North end of Lodge Cut.
4	4	
4	10	
5	10	
7	4	
6	10	
7	4	

Col. 71.

7	4×	
7	4	
7	4×	
7	10	
7	10×	
7	4	
6	10×	
6	10	
6	4×	
6	4	
6	4×	
6	4	
6	4×	
5	4	
5	4×	
5	4	
4	10×	
4	10	
4	10×	
5	4	
5	10×	
5	10	Wood Pile.
5	4×	
4	10	
4	10×	
5	4	Shoal and Meadows.
5	4×	
5	10	
5	10×	
8	4	
6	10×	

LANESBOROUGH TO TARMONBARRY—*continued.*

Col. 71. *continued.*	Col. 72.		Col. 72. *continued.*			Col. 72. *continued*		Col. 72. *continued.*		Col. 72. *continued.*	
Ft. In.	Ft. In.		Ft. In			Ft. In.		Ft. In.		Ft. In.	
7 4	22 10×	Rushes.	7 4	Rushes.	Rushes.	4 7×	Rushes.	5 4	Enter Cloondrah Canal.	4 10×	Soundings taken every Chain.
8 10×	21 10		6 10×			4 7		5 4×		4 7	
11 4	17 10×		4 10			4 7×		4 7		4 7×	
13 4×	17 10		4 10×			4 1		4 1×	Soundings taken every Chain.	4 1	
16 10	9 4×		4 10			3 7×		5 1		4 4×	
19 4×	7 10		4 7×			4 4		5 1×		3 10	
21 10	7 4×		4 4			3 10×		4 10		4 3×	On Lower Sill of Lock.

TARMONBARRY TO RUSKEY.

Col. 73.		Col. 74.		Col. 75.		Col. 76.		Col. 77.		Col. 78.	
Ft. In.		Ft. In.		Ft. In.		Ft. In.		Ft. In.		Ft. In.	
6 10×		6 4		9 4	53′ 0″ wide.	8 10×		4 10		11 10	
5 2		4 6		9 1×		7 10		7 4		9 10×	
5 1×		4 1×	Old Accommodation Bridge	9 7		7 10		6 1×		7 10	
4 4		4 4		7 4		9 10×		4 7		11 10	
4 1×	25′ 0″ wide on surface of water.	4 1		7 7×		15 4		6 4		12 3×	Turning out of the Camlin into the Main Channel.
4 11		4 4×	26′ 0″ wide.	7 4		14 10		6 7×		15 3	
4 9×		5 7		5 7	Fallon River.	9 10×		4 7		17 3×	
4 1		5 7		5 4×		7 4		5 10		17 9	
4 1×		5 4×		7 4		9 10		6 10×		17 9×	
4 4	21′ 6″ wide.	5 4		7 7		7 4×		7 10		17 9	
4 5×		5 1		8 10×		6 10		6 7		18 3×	
5 8		6 7×		8 7		6 10		6 7×	58′ 0″ wide.	18 9	
5 9×		6 10		6 4		6 10×		6 1		19 9×	
5 1		8 7		7 10×		7 10		6 7		20 9	
5 4×		8 7×	66′ 0″ wide.	6 4		9 4		7 4×		21 3×	
5 8		10 1		9 10		8 1×		8 10		21 3	
6 4×		11 10		8 1×		7 10		8 10		22 9×	
4 9		12 10×		8 4		8 7		4 10×		22 9	
5 4×		11 10		9 4		7 7×		7 10		22 9×	
4 10		11 10		7 4×		8 7		7 7		23 6	
6 1×	Enter Camlin River.	12 4×		8 7		8 7		7 7×		23 9×	
5 4		13 4		8 4		7 10×		7 7		20 3	
4 7		13 4		5 7×		7 7		7 4		18 9×	
5 1×		13 4×		11 4		7 7		6 7×		17 9	Lough Forbes.
4 4		13 10		3 10		6 7×		7 1		17 3×	
5 10		11 10		9 4×		6 4	53′ 0″ wide.	7 4		17 3×	
4 5×		9 10×		9 4		6 7		8 10×		15 9×	
5 10		8 10		11 7		6 7×		11 1		14 9	
7 4		9 10		11 1×		5 10		7 7		13 9	
8 7×		9 10×		10 4		7 1		8 1×		13 9	
7 4		8 10		10 10		8 1×		8 1		12 9×	
9 10		5 10		11 1×		6 10		6 10		11 9	
7 10×		9 10×		10 10		7 1		7 4×		10 9	
10 10		12 10		11 7		6 7×		8 7		10 3	
9 10		3 10		12 10×		7 1		8 1		9 9×	
11 10×		6 10×		13 10		5 1		7 1×		10 3	
11 10		8 4		14 10		5 4×		7 4		10 3	
9 10		7 10		14 10×		6 10		8 1		10 3	
8 10×		6 10×		13 10		7 4		8 10×		10 9×	
10 4		6 4		12 10		4 7×		8 4		10 3	
8 10		7 10		12 10×	90′ 0″ wide.	4 10		8 1		9 9	
8 10×		8 10×		12 10		4 4		8 7×		8 9	
8 10		7 10		13 10		3 10×		9 1		8 9×	
7 4		12 10		12 10×		4 7		9 4		8 9	
6 10×		14 10×		13 10		4 10	Branch to Ballykenny	8 4×		8 9	
8 10		13 4		13 4		6 1×		7 7		9 3	
9 10		7 10		12 10×		6 4		7 7		9 3×	
9 10×		6 4×		12 10		6 7		9 7×		8 9	
8 4		10 4		11 10		6 10×		8 10		8 3	
7 10		10 10		11 10×		3 7		8 10		8 9	
8 4×		8 4×		11 4		3 10		9 4×		8 9×	
8 4		9 4		11 4		5 1×		9 7	66′ 0″ wide.	8 9	
7 4		8 10		11 4×		6 4		9 1		8 9	
7 10×		8 10×		9 10		5 4		8 7×		9 3	
		7 10		9 4		4 4×		11 10		9 3×	

(*continued*)

TARMONBARRY TO RUSKEY—*continued.*

Col. 79.

Ft.	In.	
9	3	
9	3	
9	3	
9	9×	
9	3	
9	9	
9	3	
9	3×	
8	9	
8	9	
8	9	
8	9×	
8	3	
8	3	
8	3	
8	3×	
8	3	
7	9	
7	9	
7	9×	
7	9	Opposite Lord Forbes' Boat-house.
7	9	
7	9	
7	6×	
7	3	
7	3	
7	3	
7	3×	
7	3	
7	9	
7	9	
7	9×	
7	9	
8	3	
8	3	
8	3×	
8	6	
8	3	
8	6	
8	3×	
8	6	Lough Forbes.
8	3	
8	6	
8	9×	
8	6	
8	3	
8	3	
8	3×	
8	3	
8	9	
8	9	
8	9×	
9	0	
9	3	
9	3	
9	0×	

Col. 80.

9	3	
9	0	
9	0	
8	9×	
8	9	
8	3	Lough Forbes
8	0	
8	3×	
8	3	
8	9	
8	9	
8	6×	
8	6	
8	3	
8	0×	

Col. 80. *continued.*

Ft.	In.	
7	9	Lough Forbes.
7	9	
7	3×	
6	6	
5	9	
5	9×	
5	6	Eastern Channel between Rushes.
5	6	
5	6×	
5	6	
5	3	
5	0×	
4	9	
5	0	
4	9×	
4	9	
4	9	
4	9×	
5	0	
5	9	
5	9×	
6	6	
6	3	
6	3×	
6	3	
6	6	
6	9×	
3	9	A piece of rock, or a stone.
6	3	
6	9×	
6	9	
6	9	
7	3×	
7	0	
7	3	
7	3×	
7	3	
7	6	
7	6×	
7	3	
7	3	

Col. 81.

7	3×	
7	3	
6	9	
6	9×	
6	9	
6	9	
6	9×	
6	9	
6	9	
6	9×	
6	9	
6	9	
6	9×	
6	9	Lough Forbes.
6	9	
6	9×	
6	9	
6	9	
7	0×	
7	0	
7	0	
7	3×	
7	3	
7	6	
7	6×	
7	6	
7	6	
7	9×	
8	0	

Col. 81. *continued.*

Ft.	In.	
8	3×	
8	9	
8	9	
9	3×	
9	6	
9	6	
10	0×	
10	0	
10	3	
10	6×	Lough Forbes.
10	9	
10	6	
10	9×	
10	9	
10	9	
10	6×	
10	6	
10	6×	
10	6	
10	3	
10	0×	
9	6	
9	3	
9	0×	
8	6	
8	6	

Col. 82.

8	6×	
8	6	
8	3	
8	6×	
8	3	
8	3	
8	3×	
8	3	
8	3	
8	3×	
8	3	
8	3	
8	0×	
8	3	
8	9	
9	3×	
8	0	
7	0	
7	0×	
5	9	
6	0	
6	0×	
6	9	Kilbarry.
7	0	
7	0×	
6	3	
5	3	
4	9×	Δ
4	3	
3	3	
3	9	
3	9	
3	9×	
3	6	Clooneen Cox Cut.
4	0	
3	9	
3	9	
3	9×	
3	9	
3	9	
3	9	
3	9	
4	0×	
4	3	
4	3	

Col. 82. *continued.*

Ft.	In.	
4	3	Clooneen Cox Cut.
4	6	
4	6×	
4	3	
4	3	
4	3	
4	0	
4	3×	
4	0	
4	0	
3	9	

Col. 83.

4	0	
4	0×	
3	9	
4	0	Δ
3	3	
3	9	
3	9	
4	0	
4	0	
3	6×	
4	3	
4	0	
4	3	
3	9	
3	9	
3	9×	
4	0	
3	6	
3	6	
3	6	
3	6	
3	6×	Turn between Islands.
5	6	
6	9	
7	9	
8	3×	
8	6	
7	6	
5	6	
6	9×	
9	6	
8	9	
8	9	
7	9×	
8	6	
8	3	
6	9	
6	9×	
6	3	
7	9	
7	9	
6	0×	
6	3	
9	9	
5	9	
7	9×	
11	9	
8	9	
12	9	
9	3×	
7	9	
7	3	
8	9	
6	6×	
6	9	
5	9	

Col. 84. *continued.*

Ft.	In.	
7	9	
8	9×	
8	9	
8	3	Kennedy.
8	3	
8	0×	
8	3	
8	0	
7	9	
7	6×	
8	6	
5	0	
3	9	
3	9×	
4	0	
3	6	
2	0	
2	3×	
2	9	
2	9	
3	3	
3	9×	
4	6	Clooneen.
5	6	
5	6	
4	9×	
4	3	
4	6	
3	0	Pile.
3	3×	
4	3	
3	9	
3	6	
3	6×	Pile.
3	9	
3	9	
3	9	
4	3×	
3	6	Ruined Beacon.
3	9	
4	0×	
4	3	
4	6	
4	3×	
4	6	
4	9	
5	0×	
5	6	
4	9	
3	6×	
3	0	
2	9	
2	9×	
3	0	
3	3	
3	6×	

Col. 85.

3	6	
3	3	
3	0×	Δ
3	6×	Clounfail Cut.
3	0	
3	3	
3	6	
4	0×	
4	3	
4	6	
4	6	
4	6	
4	6×	
4	9	
4	9	

Col. 85. *continued.*

Ft.	In.	
4	9	Clounfail Cut.
4	6×	
4	6	
4	6	
4	3	
4	3×	
4	3	
4	0	
4	0	
3	9×	
3	9	
3	0	
3	9×	
4	9	
5	9	
6	3×	
6	0	
7	0	
7	6×	
7	9	
8	3	
9	0×	
9	9	
11	0	
10	6×	
10	3	
10	3	
10	9×	
11	0	
11	9	
11	6×	
12	0	
12	3	
12	3×	
14	3	
14	9	
16	3×	
16	3	
16	3	

Col. 86.

16	9×	
16	3	
15	3	
14	9×	
13	9	
12	9	
10	9×	
9	9	
10	3	
10	3×	Fine Wide Channel.
10	3	
10	0	
9	9×	
10	6	
9	6	
9	3×	
9	0	
9	0	
8	9×	
9	0	
8	9	
8	9×	
8	9	
8	9	
9	0×	
9	0	
9	0	
9	0×	
9	0	
9	0×	
8	9	

TARMONBARRY TO RUSKEY—*continued.*

Col. 86. *continued.*

Ft.	In.	
8	6	Channel.
8	0	
8	0×	
8	0	
8	0	
7	9	
8	0×	
8	0	
7	9	
7	9	Wide
7	9×	
7	9	
7	9	
7	9	
7	9×	
7	6	
7	6	Fine
7	6	
7	6×	
7	6	
7	6	
7	6	
7	6×	

Col. 87.

Ft.	In.
7	3
7	3
7	3
7	3×
7	3

Col. 87. *continued.*

Ft.	In.	
7	6	Channel.
7	6	
7	6×	
7	9	
8	0	
8	0	
8	6×	
9	3	
10	0	
10	9	Wide
11	9×	
12	9	
15	9	
18	3	
20	3×	
24	3	
30	9	Fine
32	3	
31	9×	
28	3	
21	9	
19	3	
18	9×	
18	9	
16	9	
14	9	
12	9×	
10	9	
10	3	
9	9	
9	3×	
9	3	

Col. 87. *continued.*

Ft.	In.	
9	0	Channel.
8	9	
9	0×	
9	0	
9	3	
9	3	
9	3×	
9	3	
9	6×	
9	6	
9	3×	Wide
9	3	
8	0×	
8	3	
7	3×	
6	3	
9	9×	

Col. 88.

Ft.	In.	
10	9	Fine
1[illegible]	9×	
10	9	
11	0×	Pile. ⊥
10	3	
9	9×	
9	3	
9	0×	
8	9	Pile. ⊥
8	9×	
8	6	

Col. 88. *continued.*

Ft.	In.	
8	0×	Channel.
7	6	
7	3×	
6	9	Pile. ⊥
6	9×	
7	0	
6	3×	
5	9	
5	9×	
5	9	Wide
5	9×	
5	9	
5	3×	
4	9	
4	9×	
4	9	
4	9×	
3	9	Fine
4	9×	
5	3	
6	9×	
6	6	
5	3×	
4	3	
3	3×	⊥ Pile.
4	0	
3	6×	
4	3	
4	0×	
3	9	⊥ Pile.
3	3×	
3	9	

Col. 88. *continued.*

Ft.	In.	
3	9×	Channel.
3	3	
3	9×	
3	9	
3	9×	⊢ Wide
2	6	
3	3×	Fine
3	6	
4	3×	
4	6	
2	9×	

Col. 89.

Ft.	In.	
3	0	
5	3×	Rabbit Island.
5	9	
4	9	
4	3×	
3	9	
4	3	
4	9×	
4	6	
4	9	
3	9×	
4	6	
4	0	
5	9×	
5	3	
6	0	
6	9	

Col. 89. *continued.*

Ft.	In.	
7	6×	
6	9	
5	0	
4	9	
5	3×	
6	3	
7	6	
6	3	
6	9×	
7	3	
6	3	
6	9	
9	9×	
10	0	
7	9	
5	6	
7	3×	
9	6	
10	3	
9	9	
9	9×	
8	6	
9	3	
9	6	
3	6×	
3	6	
4	0	Lower Sill of Ruskey Lock.
4	3	

RUSKEY TO JAMESTOWN.

Col. 91.

Ft.	In.	
4	2	Upper Sill of Ruskey Lock.
0	0	
0	0	
0	0	
0	0	
3	9×	Ruskey Canal, taken along the centre line.
3	9	
3	9×	
3	9	
4	0×	
3	6	
3	9×	
3	6	
3	6×	
3	9	
3	9×	
3	9	
4	0×	
4	0	
3	9×	
3	9	
4	0×	
3	6	
3	6×	
3	3	
3	3×	
3	0	
3	0×	
3	6	
3	6×	
3	6	

Col. 91. *continued.*

Ft.	In.
3	6×
3	6
3	6×
3	6
3	6×
3	9
3	6×
3	6
3	6×
3	0
4	0×
4	0
3	9×
3	9
4	0×
4	3
4	6×
3	9
4	0×
4	3
4	3×
4	3
4	6×
4	0

Col. 92.

Ft.	In.
4	0×
4	3
3	9×

Col. 92. *continued.*

Ft.	In.	
3	6	
4	3×	
4	3	
4	3×	
4	0	
3	9×	
3	9	
3	9×	
4	0	
3	9×	Wood Pile, termination of Canal.
4	9×	Pidgeon Island.
5	6	
6	6	
6	0×	
5	6	
4	9	
4	6×	
4	9	
5	6	
6	6×	
7	9	
8	3	
8	9×	
8	9	
10	0	
11	0×	
11	3	
11	6	
11	6×	
12	0	

Col. 92. *continued.*

Ft.	In.
13	0
9	0×
6	0
5	0
9	6×
23	0
26	0
25	0×
17	6
17	0
17	0×
16	6
18	6
17	0×
14	0
13	0
11	0×
9	0
8	0
8	0×
8	0

Col. 93.

Ft.	In.	
8	6	Lough Boeffin.
7	6×	
7	0	
7	3	
9	0×	
8	9	

Col. 93. *continued.*

Ft	In.	
8	6	Lough Boeffin.
8	3×	
8	0	
7	9	
7	6×	
7	9	
7	6	
7	9×	
7	6	
7	6	
7	9×	
7	9	
7	6	
7	9×	
8	0	
8	0	
8	3×	
7	9	
7	0	
6	9×	
6	9	
8	0	
8	9×	
8	6	
9	0	
9	3×	
9	0	
9	3	
9	3×	
9	6	D ummo'.
9	6	

Col. 93. *continued.*

Ft.	In.	
9	9×	
10	9	
9	9	Old Chimney.
10	0×	
9	9	
9	0	
10	0×	
10	0	
10	3	
10	6×	
10	9	
11	0	
11	0×	
10	9	
11	0	
11	6×	
12	0	
12	6	

Col. 94.

Ft.	In.	
12	0×	
12	6	
12	0	Abbott Island.
12	6×	
11	0	
11	6	
12	0×	
12	6	
12	6	

(continued)

RUSKEY TO JAMESTOWN—*continued.*

Col. 94, *continued.*

Ft.	In.	
13	0+	
12	6	Abbott Island.
13	0	
13	0+	
13	0	
11	0	
10	0+	
9	0	
9	5	
9	6+	
9	9	
9	6	
9	6+	
9	6	
9	3	
9	6+	
9	6	
9	6	
9	3+	
9	6	
9	6	
9	6+	
9	3	
9	3	
9	6+	
9	3	
9	3	
9	3+	
9	3	
9	0	
9	0+	
9	0	
8	9	
9	0+	
8	9	
9	0	
9	0+	
9	0	
8	9	
9	0+	
8	9	
8	9	
8	9+	
8	9	
8	9	
8	6+	

Col. 95.

8	9	
8	6	
8	6+	
8	3	
8	6	
8	6+	
8	6	
8	6	
8	3+	Lough Boeffinn.
8	3	
8	3	
8	3+	
8	3	
8	3	
8	3+	
8	3	
8	3	
8	0+	
8	0	
8	3	
8	0+	
8	0	
8	0	

Col. 95, *continued.*

Ft.	In.	
8	0+	Stake. ⊥
8	0	
7	9	
8	6+	
8	0	
8	0	
8	0+	
8	0	
7	9	
7	9+	
7	9	
7	9	
8	0+	Lough Boeffinn.
8	0	
8	3	
8	3+	
8	0	
8	3	
8	6+	
8	6	
8	6	
9	0+	
9	9	
10	3	
11	3+	
12	6	
14	0	
13	6+	
13	6	
13	6	
13	0+	
12	0	

Col. 96.

11	6	
11	0+	
9	6	
10	0	
8	6+	
9	0	
9	0	
8	6+	△
6	6	
7	6	
6	6+	
6	3	
6	9	Beacon △ in ruins.
7	0+	
7	9	
7	9	
7	6+	
7	6	
7	3	
7	3+	
7	9	
7	9	
8	3+	
8	9	
9	0	
9	9+	
10	3	
9	9	
10	0+	
10	3	
9	3	
8	0+	
7	6	
8	6	
8	6+	
6	9	

Col. 96, *continued.*

Ft.	In.	
3	9+	Derrycarney Shoal, Mr. F. Nesbitt.
4	3	
4	0+	
6	0	
7	0+	
4	9	
5	0+	⊥ Stake
5	3	
7	9+	
5	9	
11	6+	
11	6	
11	9+	
10	6	
8	0+	
10	0	
11	0+	
10	9	
11	0+	

Col. 97.

10	9	Derrycarney.
11	0+	
12	0	
12	6+	
12	6	
13	0+	
12	0	
12	6+	
12	0	
12	0+	
12	0	
12	0	Lough Boderrig.
12	0	
12	0+	
11	6	
11	6	
11	6+	
11	0	
11	6	
11	0+	
10	6	
11	0	
11	6+	
10	6	
11	0	
11	0+	
11	0	
11	0	
11	6+	
11	0	
11	6	
11	6+	
12	0	
11	6	
11	6+	
12	0	
12	0	
12	0+	
12	0	
12	6	
13	0+	
12	6	
13	0	
13	0+	
13	0	
13	0	
13	0+	
13	0	
12	6	
13	0+	
12	6	

Col. 97, *continued.*

Ft.	In.
12	6
12	0+
11	6
11	0

Col. 98.

11	0+	Lough Boedarrig.
11	0	
10	0	
10	0+	
10	0	
9	6	
9	9+	
9	9	
9	9	
9	9+	
9	6	
9	6	
9	3+	
9	6	
9	3	
9	6+	
9	6	
9	3	
9	3+	
9	3	
9	3	
9	3+	
9	6	
9	6	
9	6+	
9	6	
9	9	
10	0+	
10	3	
10	9	
11	3+	
13	0	
13	0	
11	0+	
10	3	
9	0	
9	3+	
9	0	
8	9	
8	6+	
8	6	
8	3	
8	3+	
8	3	
8	0	
8	0+	
8	0	
8	0	
8	0+	
7	9	
7	6	
7	3+	
6	6	
6	6	
6	6+	

Col. 99.

6	6
6	6
6	6+
6	6
6	6
6	0+
6	0
5	9

Col. 99, *continued.*

Ft.	In.	
5	6+	Shallow Point of Skeagh.
5	6	
5	6	
5	0+	
4	9	
4	3	
4	0+	
3	9	
3	6	
4	3+	
4	6	
4	9	
5	3+	
5	6	
5	3	
8	3+	Fine Wide Channel.
10	3	
11	6	
10	0+	
7	6	
6	0	
5	6+	
8	0	
8	3	
8	6+	
6	0	
9	0	
12	0+	
12	0	
10	6	
11	6+	
13	6	
14	0	
13	0+	
13	0	Skeagh.
13	6	
13	0+	
12	6	
12	6	
12	0+	
12	6	
12	6	
12	6+	
13	0	
12	6	
13	0+	
13	6	

Col. 100.

14	6+	
14	0	
15	6	
18	0+	
19	0	Lough Tap.
18	0	
17	6+	
15	0	
12	0	
11	6+	
11	0	
9	0	
8	0+	
6	3	
5	6	
5	3+	
5	3	
5	0	
5	0+	
5	0	
4	9	
5	0+	
4	9	

Col. 100, *continued.*

Ft.	In.	
4	9	Lough Tap.
4	9+	
4	9	
5	0	
5	0+	
4	9	
4	6	
4	6+	
4	6	
4	6	
4	6+	
4	6	
4	6	
4	3+	
4	3	
4	6	
4	6+	
4	6	Shoal of Rushes.
4	9+	
5	0	
5	0	
4	9+	
4	9	
5	0	
5	3+	
6	3	
7	9	
11	6+	
12	0	
26	0	
29	0+	
29	6	

Col. 101

27	0	
23	0+	
19	6	
16	6	
11	6+	
7	6	
5	9	
5	6+	Rocky Shore on each side.
6	6	
8	3	
9	3+	
12	0	
12	0	
11	6+	
8	0	
10	0	
11	6+	
11	0	
12	0	
13	0+	
15	0	
15	6	
17	0+	
18	6	
28	0	
23	0+	
25	0	Turning left to Lough-na-[illegible].
20	6+	
5	0	
6	6+	Entrance.
12	0	
17	0	
17	0+	
15	6	
14	0	
12	0+	
9	0	
8	0	
8	0+	

Ruskey to Jamestown—*continued.*

Col. 101. *continued.*		Col. 101. *continued.*		Col. 102.		Col. 102. *continued.*			Col. 102 *continued.*		Col. 102. *continued.*		
Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.		Ft.	In.	Ft.	In.	
7	3	4	3	3	9	4	0		4	0	3	6	
6	6	Enter Jamestown Canal.		4	0	4	0		4	0	3	6	
5	6×			3	0×	4	0×		3	9×	3	3×	
5	0	3	9×	4	0	3	9		3	9	3	3	
4	6	4	0	4	0	3	6		3	6	3	9	
4	0×	4	0	4	0×	3	9×	Lay-by.	3	8×	4	3×	
3	6	3	9×	4	0	4	0		3	9	3	10	Lower Sill of Jamestown Lock.
3	6			4	0	4	0		3	9			
4	3×			4	0×	3	9×		3	9×			

JAMESTOWN TO BATTLE BRIDGE.

Col. 103.			Col. 104.			Col. 105.			Col. 106.			Col. 107.			Col. 108.		
Ft.	In.		Ft.	In.		Ft.	In.		Ft.	In.		Ft.	In.		Ft.	In.	
3	8	On Upper Sill of Jamestown Lock.	4	0		19	6		5	9		12	0		4	9	
4	3×		4	0		24	6×		5	9		12	6×		4	0	
4	3		4	0×		23	6		5	6×		13	0		3	6	
4	3		3	9		18	0×		5	9		14	0×		3	9×	
4	3×		3	9		12	0		6	0		17	0×	Cloonfad.	4	0	
4	3		3	9×		7	6×		6	3		18	6×		4	6	
4	2		3	9	Partially rocky.	6	6		6	6×		19	0×		5	0×	
4	0×		3	9		7	0×		7	3		16	0×	Δ	4	0	Δ
3	3		4	0×	Rocky on each side, average about 5 ft. above water.	8	0	Soundings taken near West side.	7	3		9	6×		3	6	Shoal at Curnacurragh.
4	0		3	9		9	0×		7	6		7	0×		3	6	
4	0×		4	0		9	6		8	3×		6	0×	Enter the broad part.	4	9	
3	9		4	0×		11	6×		8	6		6	6		5	0	
4	0		3	9		13	6		9	6	Kilbride, wide part.	6	9×		6	3×	
3	6×		3	9		17	0×		10	0		9	9		7	9	
3	9		4	0×		14	6		12	0×		12	0×		10	9	
3	9		4	0		12	0×		11	6		20	0×		11	3	
3	9×		4	0		13	0		11	6		23	0×		7	0	
3	9		4	0×		14	0×		12	0		23	0×		6	3×	Δ
3	9		4	0		14	6		12	6×		20	6×		6	0	
4	0×		3	9		12	6×		12	6		16	6×		6	0×	
4	0		4	0×		16	6		13	0		13	6×		5	0	
3	9		3	9	Rocky on each side, average about 5 feet above water.	20	6×		13	6		12	0		4	6×	Δ
3	9×		4	0		23	6		13	6×		10	0		3	6	
4	0		4	0×		22	6×	Fine wide Channel,	13	6		9	0		2	3	
3	9		3	9		18	0		14	0	Curraughrin.	8	0		2	9	
3	9×		3	9		18	0×		14	0		7	6		2	6×	
4	0		3	9×		17	0		14	0×		8	0×		3	6	
3	9		4	0		12	6×		14	6		7	9		3	0	
3	9×		4	3		7	6		16	0		7	9	Δ	3	9×	Δ
3	6		4	0×		7	6×		17	6		7	9		3	9	
3	9		3	6		7	0		19	0×		8	0		3	6	
4	0×		4	0	Crooked part.	6	6×		20	6		8	6		3	9×	
3	9		3	9×		5	9		20	0		8	0×		3	9	
3	6		3	9		5	6×	Doyle's Island.	19	0		7	6		4	0	
3	9×		3	9		6	9		15	6×		6	9	Enter narrow part.	4	3×	
3	9		3	9×		5	9×		12	6		6	9		4	3	
3	9		3	6		4	3		14	0		7	6		4	0	
4	0×		3	6		4	0×		13	6		7	9		3	9×	
4	0		3	9×		4	3		13	0×		8	9×		4	0×	
4	0		4	0		4	0×		11	6		10	0		5	0	
3	9×		3	9		3	6		10	0		13	0		5	3×	Snail Island.
3	9		4	0×		4	0×		9	6		14	6		5	9×	
3	9		4	0		4	6		8	0×		15	0		7	0	
4	0×		4	0		4	6×		12	6		15	6		7	3×	
3	9		Upper end of Jamestown Canal.			4	9		14	6		10	0×		7	6	
3	9	Spoil Bank begins.				5	0×		18	0		7	6		7	3	Enter Corry Lough.
3	9×		6	0×		5	0		24	0×		7	9		6	0×	
3	9		5	6		3	3×	Termination of Doyle's Island.	11	0		7	3		5	6	
3	9		13	0×		3	9		9	6		6	3		5	0×	
3	9×		15	0		5	6×		9	6	Δ Turn to the wide part.	5	3		5	9	
3	9		15	0×		7	0		9	6×		5	3×		6	0×	
4	0		14	6		6	9×		10	0		5	0		6	6	
4	0×		15	0×		6	6		10	6×		5	0		6	0×	

(*continued*)

JAMESTOWN TO BATTIE BRIDGE—*continued.*

Col. 109.

Ft.	In.	
6	3	
6	0×	
6	3	
6	6×	
7	0	
7	0×	
6	9	
6	9×	
7	0	
7	3×	
7	9	
7	9×	
7	9	
7	6×	
6	3	
6	9×	
6	6	
6	0×	
5	9	
6	0×	
5	9	
5	9×	
5	9	
5	9	
5	9	
5	9	
5	6	
5	6	
5	6	
5	6	
5	6	
4	6	
5	6	△ Beacon in ruins. Runcurreen.
5	9	
6	0	
6	0×	
5	6	
5	6	
6	6×	
6	9	Course near West side.
6	6	
6	9×	
6	9	
6	6	
7	3×	
8	3	
9	0	
10	0×	
13	0	
16	0	
15	6×	
14	0	
13	0	
12	0×	
12	0	

Col. 110.

12	0	
11	6×	
12	6	
13	6	
16	0×	
17	6	
18	0	
19	0×	
19	6	
18	6	
19	0×	
18	6	
18	6	
17	0×	
16	0	
14	6	

Col. 110. *continued.*

Ft.	In.	
14	0×	
14	0	
14	0×	Rushes at West point of Inchanuckers.
13	6×	
13	0	
13	6×	
13	6	
15	0×	
16	6	
15	6×	
16	0	
14	6×	
12	6	
11	6×	
13	0	
20	0×	
20	6	
20	6×	
21	0	
21	0×	
20	6	
19	0×	Inchanuckers or Anderson's Island. Sailing course between Island and Connaught Shore; a fine deep and wide Channel.
19	0	
19	0×	
18	0	
19	0×	
19	0	
18	6×	
18	0×	
17	0	
16	6	
15	6	
11	6×	
8	6	
14	0	
18	0	
21	6×	
21	0	
19	6	

Col. 111.

17	6	Inchanuckers.
18	6×	
19	0	
20	0	
20	6	
21	6×	
22	6	Enter narrow part.
22	6×	
22	0	
23	0×	
22	6	
20	0×	
15	0	
13	0×	
13	0	
13	0×	
13	0	
13	0×	
13	0	
13	0×	
13	0	Curra-draeth.
12	6×	
11	0	
8	0×	
5	3	Attyrory.
5	3×	
6	0	
9	0×	
12	0	
15	0×	

Col. 111. *continued.*

Ft.	In.	
16	0	
17	6×	
22	0	
23	6×	
26	0	
17	0×	Islands.
12	0	
6	0×	
6	3	
5	0	
4	6×	
4	9	
7	3	Grose's
9	0×	
11	6	
12	6	
9	0×	
8	6	
9	6	
9	6	
7	0×	
10	0	
11	6	
12	6	

Col. 112.

12	6×	
10	6	
7	6	
5	3	
6	9×	
8	3	
9	3	
10	6	
11	9×	
11	0	
9	6	
8	3	
7	9	
7	3	
7	0×	
6	3	
6	3×	
6	3	
6	0×	
5	9	
7	6×	
10	6	
13	0×	
20	0	
21	0×	
20	0	
20	0×	
19	0	
17	6×	
12	0	
11	6×	Navigation Arch of Carrick Bridge, 5th Arch from West side.
13	6	
16	6×	
16	6	
13	0×	
10	0	
6	6×	
3	6	
3	6×	
6	6	
8	3	
12	6×	
15	6	
18	0	Opposite Gaul.
20	0×	
22	6	

Col. 112. *continued.*

Ft.	In.	
16	0	
14	0×	
13	6	
15	0	
17	0×	Sharp turn.
19	6	
22	6	
11	6×	
11	0	

Col. 113.

13	0
12	0×
10	6
11	6
10	6×
10	0
8	0
9	0×
9	3
10	9
12	0×
14	6
14	6
14	0×
12	0
11	0
10	0×
9	6
9	0
8	9×
8	6
8	3
8	6×
8	9
8	3
8	6×
8	9
9	0
9	0
9	3×
9	6
9	9
9	9
10	6×
11	0
12	0
12	6
14	0×
15	6
17	6
18	6
18	0×
15	6
12	0
11	6
8	0×
7	0
4	3
6	6
10	0×
12	9
12	6
10	0
9	6×
10	0

Col. 114.

10	0
8	9
7	0×

Col. 114. *continued.*

Ft.	In.	
8	3	
9	0	
10	0	
10	9×	
11	9	
8	9	
9	0	
8	0×	
8	3	
8	9	Cloonmane.
9	9	
9	9×	
10	6	
10	0	
8	6	
8	9×	Sharp turn.
7	0	
5	6	
6	0	
8	6×	
10	3	
10	9	
10	9	
10	9×	
11	0	
11	0	
11	6	△
12	6×	
13	0	
13	6	
13	6	
12	3×	
12	0	
13	6	
14	6	
15	6×	
16	6	
17	0	
16	0	
14	6×	
12	0	
10	0	
10	6	
11	0×	
13	0	
15	6	
17	0×	
18	0	
18	6	
13	0×	Boyle Water.
9	0	
9	3	

Col. 115.

8	6×	Boyle Water.
8	3	
8	9	
9	0×	
9	0	
9	3	
9	0×	
9	0	
8	9	
8	6×	
8	6	
8	6	
8	3×	
8	3	
8	3	
8	6×	
8	3	
8	0	
7	9×	

Col. 115. *continued.*

Ft.	In.	
7	9	
7	6	
7	6×	
7	6	
7	6	
8	0×	
7	9	
8	0	
8	0×	
7	9	
7	9	
7	6×	
7	6	
7	0	
7	0×	
7	0	
6	9	
7	0×	
7	0	
6	6	
6	6×	
6	6	
6	3	
6	9×	
6	0	
5	6	Point of Island.
5	0×	
5	0	
5	3	
5	0×	
5	3	
5	6	
5	9×	
6	0	
6	6	
6	9×	

Col. 116.

6	9	
7	0	
7	0×	
6	9	
6	6	
6	6×	
6	6	
6	0	
7	3×	
7	9	
8	9	
9	3×	
10	0	
10	0×	
10	0	
10	0×	
9	3×	
8	3×	Hartley House.
8	3	
10	0	
9	9	River contracts to [illegible] ft. in breadth.
10	0×	
8	3	
6	6	
3	9	
3	9×	
9	6	
7	6	
6	9	
7	6×	
7	0	
7	0	
7	3	
8	6×	
10	3	

JAMESTOWN TO BATTLE BRIDGE—*continued.*

Col. 116. *continued.*

Ft.	In.
11	3
12	0
12	6×
12	0
11	6
11	6
12	0×
13	0
13	6
13	6
12	9×
11	6
11	0
12	6
13	6×
13	0
13	0
13	3
13	6×
14	0

Col. 117.

Ft.	In.
14	3
15	0
16	0×
17	0
15	6
13	6
13	6×
14	0
15	6
14	6
13	6×
13	6
13	6
14	6
13	6×
13	6

Col. 117. *continued.*

Ft.	In.
14	0
14	6
14	0×
13	0
12	0
12	0
12	0×
10	0
9	0
10	3
11	6×
13	0
14	0
14	6
15	6×
15	0
15	6
14	6
14	6×
14	6
14	0
13	0
12	0
11	6×
12	6
14	0×
19	0
20	6×
13	6
10	6×
11	0
10	3×
10	9
11	3×
11	0
10	3×
10	9
10	0×
8	9

Col. 118.

Ft.	In.	
8	0×	
10	9	
13	0×	
10	3	
7	9×	
8	0	
8	6×	
9	0	
7	6×	
7	9	
6	0×	Port.
4	6	Side Canal
3	9	
4	0×	
4	3	
4	3	
4	6×	
4	3	Rocky on each side.
4	0	
4	0×	
4	0	
4	0	
3	9×	
4	0	
4	3×	
5	6	
7	0	
10	6×	
10	0	
13	6	
11	0×	
11	9	
12	0	
12	6×	
13	6	
13	3	
12	3×	
11	6	
11	6	
12	0×	

Col. 118. *continued.*

Ft.	In.
12	6
13	0
14	0×
14	0
15	0
16	6×
15	6
11	6
10	0×
8	6
8	9
9	3×
10	0
11	0
12	0×

Col. 119.

Ft.	In.	
13	6	
14	6	
14	3×	
11	0	
8	6	
9	0×	△
10	3	
14	3	△
11	0×	
9	6	
7	3×	
7	9	
8	0×	
7	9	
5	6×	Rocky Shore and bottom.
6	6	
6	0×	
6	3	
6	9×	
5	0	Sharp turn, Leitrim.
4	6×	
4	9	

Col. 119. *continued.*

Ft.	In.	
5	3×	
6	0	
7	0×	
7	0	
8	3×	
7	9	
8	9×	
9	0	
8	9×	
8	6	
7	3×	
12	0	
16	0×	
16	0	
21	0×	Sharp turn.
14	0	
24	0×	
26	0	
10	0×	Sharp turn.
7	0	
6	6×	
7	3	
5	9×	
3	9×	
4	6	
5	6×	
13	0	
16	0	Sharp turn.
14	0	
13	0×	
7	6	
2	9	
2	9	

Col. 120.

Ft.	In.	
3	0×	
5	0	
5	6	
7	3	Sharp turn.

Col. 120. *continued.*

Ft.	In.	
10	0×	
10	3	
12	0	
13	6	
16	0×	
16	0	
10	0	
16	0	Sharp turn.
15	6×	
8	0	
8	0	
7	6	
7	9×	
7	9	
7	3	
6	0	
5	0×	
3	0	
4	6	
4	6	
4	9×	
5	0	
5	6	
6	0	
4	6×	
4	0	
4	9	
4	9	
4	9×	
5	0	
4	0	
4	0	
4	6×	
3	9	
3	6	
3	3	
4	6	
3	9×	
3	5	
On Lower Sill of Battle Bridge Lock.		

BATTLE BRIDGE TO LOUGH ALLEN.

Col. 121.

Ft.	In.	
5	0½	On Upper Sill of Battle Bridge Lock.
0	0	
5	0	
5	0×	Harbour.
5	3	
5	0×	
5	0	
4	9×	
4	9	
4	9×	
4	9	
4	9×	
5	0	
5	0	
4	9×	
4	9	
4	9	
4	9×	
4	9	
4	9	
4	9×	
4	9	
4	9	
4	9×	
4	9	

Col. 121. *continued.*

Ft.	In.	
4	9	
4	9×	
4	9	
5	0	
5	0×	
4	9	
4	9	
5	0×	
5	0	
4	9	
4	9×	
4	9	25 feet wide.
4	9	
5	3×	
5	3	
5	6	
5	3×	
5	6	
5	6	
5	0×	
4	9	
4	9	
4	9×	
4	9	
4	9	

Col. 121. *continued.*

Ft.	In.
5	0×
4	9
4	9
4	9×
4	9

Col. 122.

Ft.	In.
4	9
4	9×
5	0
4	9
4	9×
4	9
4	9
4	9×
4	9
4	9
4	9×
4	9
4	9
5	3×
5	3
4	9

Col. 122. *continued.*

Ft.	In.
6	6×
5	9
5	9
4	9
5	0×
5	9
5	9
5	0
4	9×
4	6
4	9
5	0×
5	0
5	0
5	3×
5	0
5	0
4	9×
5	0
5	0
5	0×
5	3
5	0
5	0×
4	9

Col. 122. *continued.*

Ft.	In.
4	9
4	9×
4	9
4	9
4	9×
4	9
4	9
4	6×
4	9
4	9
4	9×
4	9
4	9
4	9×

Col. 123.

Ft.	In.
4	9
5	0
5	0×
4	9
5	0
4	9×
4	9

Col. 123. *continued.*

Ft.	In.	
4	6	
4	9×	
4	9	
4	6	
4	9×	
4	9	
4	9	
4	9×	
4	9	
4	9	
4	9×	
4	9	
4	3	
4	9×	On Lower Sill Drumleague Lock.
Bridge.		
0	0	
0	0	
4	6×	
4	9	
5	0	
5	0×	
5	0	
5	0	
5	0×	
5	0	

(continued)

BATTLE BRIDGE TO LOUGH ALLEN—*continued.*

Col. 123 *continued.*

Ft.	In.
4	9
5	0×
5	0
5	0
5	0×
5	0
5	0
5	0×
5	0
5	0
5	0×
5	0
4	9
4	9
4	9×
5	0
5	3
4	9
5	0×
5	0
5	0
4	9×
5	0

Col. 124.

5	0
5	6×
5	0
5	0
5	0×
4	9
4	9
4	9×
4	9
4	9
4	9×
5	0
4	9
5	0×
5	0
5	0
5	3×
5	0
5	0
5	0×
5	0
5	0
5	0×
4	9
4	3
4	9×
5	0
4	9
4	9×
4	9
4	9
4	9×
4	9
5	0
4	9×
5	0
4	9
5	0×
4	9
4	9

Col. 124. *continued.*

Ft.	In.	
4	9×	
5	0	
4	9	
4	9×	
4	9	
4	9	
4	6×	
4	3	
5	0	
5	0×	Bog.
4	6	
5	0	
5	0	
4	0×	
4	6	

Col. 125

4	6	
4	9×	
4	9	
4	6	
4	6×	
4	9	
4	6	
4	9×	
4	9	
4	6	
5	0×	
4	9	
5	0	
4	9×	
4	9	
4	9	
5	3×	
4	9	
5	0×	
4	9	
5	0×	
5	0	
5	0	
5	0×	
5	0	
5	0	
5	0×	
4	9	
4	9	
4	9×	
4	9	Quick turn.
4	9	
4	9×	
Bridge.		
4	9	
4	9	
5	0×	
4	0	
5	0	
5	0×	
5	0	
5	0	
4	9×	
5	0	
4	9	
5	0×	
4	9	Rocky.
4	9	

Col. 125. *continued.*

Ft.	In.
4	9×
4	9
4	6
4	6×
4	6
4	9
5	0×

Col. 126

4	6	
4	6	
4	9×	
4	6	
4	6	
4	6×	
4	3	
4	3	
4	0×	
4	0	
4	0	
4	6×	
4	6	
4	3	
4	3×	
3	9	Lough Acres
4	0	
4	6×	
4	9	
4	6	
5	0×	
6	3	
5	9	
6	3×	
5	9	
6	0	
6	6×	
10	0	
13	0	
15	0×	
16	0	
15	6	
13	0×	
7	0	
4	9	
4	3×	
4	3	
4	6	
3	6×	
3	6	
4	0	
4	0×	
4	3	
4	6	
4	3×	
3	9	
4	0×	
4	0	
4	0	
4	6×	
4	6	
4	9	
4	9×	
5	0	
5	0	

Col. 127.

Ft.	In.
4	9×
4	9
5	0
4	9×
4	9
5	0
4	9×
5	0
5	0
5	0×
5	0
5	0
5	0×
5	0
4	9
4	9×
4	3
4	6
4	9×
5	0
4	9
4	9×
4	9
4	9
4	9×
4	9
4	9
4	6×
5	0
4	9
Bridge.	
5	0×
4	6
4	0
4	6×

End of Canal at Drumshambo.

Col. 128.

Soundings from head of Drumshambo Canal to Lough Allen.

4	3	
3	6	
2	6×	
2	9	
3	9	
4	9×	
5	0	
5	3	Pile. ⊥
5	6×	
6	9	
9	0	
11	6×	
13	6	
13	6	
12	6×	
10	0	
7	9	
5	9×	
4	6	
4	9	
4	9×	

Col. 128. *continued.*

	Ft.	In.	
Rushes.	4	6	Rushes.
	4	3	
	4	3×	
	4	3	
	4	6	
	4	6×	
	5	0	
	4	6	
	4	0×	
	6	9	
	7	0	
	6	6×	
	5	6	

Col. 129.

Rushes.	4	0	
	3	9×	
	4	0	
	4	3	Rushes.
	4	6×	
	4	9	
	3	6	
	5	0	
Rushes.	4	0×	
	5	0	
	5	9	
	5	9×	
	6	0	
	6	0	
	7	0×	
	7	0	
	7	0	
	7	6×	
	7	6	
	7	0	
	6	0×	
	5	9	
	6	0	
	6	0×	
	5	3	
	6	6	
	6	9×	
	5	6	
	7	0	
	9	0×	
	9	9	
	9	6	
	10	0×	
	9	9	
	10	0	
	10	6×	

Col 130.

10	9
11	0
12	0×
14	0
16	0
15	6×
14	0
13	6
10	6×
10	0

Col. 130. *continued.*

	Ft.	In.
	9	9
	9	0×
	8	9
	8	6
	8	0×
	7	9
	7	6
	7	6×
	7	6
Point	4	3×
	3	6
	8	0×
	9	6
	10	3×
	9	0
	7	9×
	8	6
	8	0×
	7	9
	8	0×
	7	3
	8	0×
	8	9
	9	3×
	9	9
	10	0×

Col. 131.

	9	6
	8	9×
	8	6
	8	0×
	8	0
	7	6×
	7	3
	7	9×
	7	0
	7	6×
	7	3
	7	3×
	8	3
	7	9×
	7	6
	7	6×
	7	9
	8	6×
	8	6
Island of Gubnacurra.	7	3×
	7	3
	7	3×
	7	6
	8	3×
	8	0
	6	6×
	5	6
	5	3×
	5	9×
	5	6
	6	9×

Lough Allen

Note.—The foregoing Soundings are taken along the Sailing Course, and therefore do not exhibit the shallowest parts of the Shoals, for which the detailed Drawings must be consulted.

The Crosses by the side of the Columns of Figures denote the Soundings which are put upon the General Maps.

The Black Lines describe the extent of Soundings opposite each Shoal, Island, &c.

Thomas Rhodes.

TABLE of the HEIGHTS of WATER upon LOCK SILLS, from *Limerick* to *Lough Allen*.

1831:	Park.	Annahbeg.	Errina.	Cussane.	Killaloe.	Hamilton.		Banagher.		Athlone.		Lanesborough, Lower Sill.	Cloondrah. Lower Sill.	Ruskey, Lower Sill.	Jamestown, Lower Sill.	Battle Bridge, Lower Sill.	Drumleague, Upper Sill	Observations.
						Upper.	Lower.	Upper.	Lower.	Upper.	Lower.							
	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.			Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Wind.
Nov. 25	13 6	12 10	11 10	13 5	- -	—	—	—	—	—	—	—	—	—	—	—	—	
26	14 6	12 7	11 11	13 6	13 6	—	—	—	—	—	—	—	—	—	—	—	—	
27	- -	13 0	12 0	13 8	13 7	—	—	—	—	—	—	—	—	—	—	—	—	
28	13 6	12 9	12 0	13 8	13 7	- -	- -	- -	- -	- -	- -	10 10	10 10	10 0	9 4	10 5	9 11	
29	13 7	12 8	12 0	13 8	13 8	- -	- -	- -	- -	- -	- -	10 10	10 9	10 0	9 5	10 3	9 11	S.
30	13 6	12 9	12 1	13 9	13 9	- -	- -	- -	- -	- -	- -	10 10	10 9	9 10	9 4	9 10	9 10	S.W.
Dec. 1	13 6	12 8	12 1	13 9	13 9	- -	- -	- -	- -	- -	- -	10 9	10 8	9 10	9 3	9 5	9 8	S.
2	13 6	12 6	12 1	13 7	13 8	- -	- -	- -	- -	- -	- -	10 9	10 7	9 8	9 1	9 2	9 6	S.E.
3	13 3	12 6	11 11	13 6	13 6	- -	- -	- -	- -	- -	- -	10 8	10 6	9 5	9 1	8 10	9 3	S.
4	13 2	12 4	11 9	13 4	13 3	- -	- -	- -	- -	- -	- -	10 6	10 5	9 0	8 7	8 7	9 0	S.
5	13 0	12 2	11 9	13 3	13 2	- -	- -	- -	- -	- -	- -	10 7	10 4	8 10	8 4	8 5	8 7	S.
6	13 0	12 3	11 9	13 1	13 3	9 6	10 11	11 2	10 10	- -	- -	10 6	10 3	8 9	8 2	8 6	8 6	S.
7	13 3	12 7	11 7	13 0	13 0	9 6	10 11	11 2	10 11	- -	- -	10 5	10 1	8 6	8 1	8 10	8 6	S.W.
8	13 0	12 2	11 6	13 0	13 1	9 7	10 11	11 2	10 11	- -	- -	10 5	10 2	8 7	8 0	8 10	8 6	S.W.
9	13 2	12 4	11 6	13 1	13 2	9 7	11 1	11 2	10 11	- -	- -	10 4	10 4	8 8	8 1	8 9	8 8	S.W.
10	13 0	12 2	11 7	13 1	13 3	9 8	11 1	11 1	10 10	- -	- -	10 4	10 5	8 9	8 2	8 8	8 9	S.W.
11	13 8	13 0	11 9	13 3	13 4	9 8	11 1	11 1	10 10	- -	- -	10 4	10 5	8 10	8 2	8 11	8 9	S.W.
12	14 0	13 2	11 10	13 6	13 4	9 8	11 0	11 1	10 10	- -	- -	10 4	10 6	9 0	8 4	9 2	8 9	S.W.
13	13 9	13 0	12 1	13 7	13 7	9 10	11 10	11 3	10 11	- -	- -	10 3	10 6	9 2	8 5	9 5	8 10	S.W.
14	13 7	12 10	12 2	13 10	13 9	9 11	11 0	11 4	11 0	- -	- -	10 3	10 6	9 2	8 6	9 5	9 0	S.W.
15	13 9	13 0	12 3	13 10	13 10	9 10	12 3	11 5	11 1	- -	- -	10 3	10 6	9 6	8 7	9 5	8 10	S.W.
16	14 0	13 3	12 3	14 0	14 0	9 10	12 2	11 5	11 1	- -	- -	10 4	10 7	9 8	8 6	9 6	8 6	S.E.
17	14 0	13 2	12 5	14 1	13 11	9 10	12 0	11 6	11 2	- -	- -	10 4	10 7	9 10	8 6	9 6	8 6	S.E.
18	14 0	12 10	12 1	14 2	14 0	9 10	12 0	11 10	11 6	- -	- -	10 5	10 8	10 0	8 7	9 11	8 7	S.W.
19	14 3	13 6	12 6	14 3	14 1	9 10	12 1	12 0	11 7	- -	- -	10 5	10 9	10 0	8 9	9 9	8 10	N.W.
20	14 0	13 4	12 8	14 4	14 0	9 10	12 1	12 2	11 9	- -	- -	10 7	10 10	10 1	8 9	9 11	9 1	S.
21	14 3	13 5	12 9	14 5	14 3	10 1	12 2	12 4	11 11	- -	- -	10 8	10 11	10 1	8 10	9 11	9 2	S.W.
22	14 6	13 10	12 9	14 6	14 3	10 2	12 3	12 4	11 11	- -	- -	10 9	10 11	10 2	8 11	10 1	9 2	S.W.
23	14 9	14 0	13 0	14 9	14 5	10 2	12 3	12 6	12 1	- -	- -	10 10	11 0	10 2	9 0	10 1	9 3	N.W.
24	14 10	14 0	13 3	14 10	14 7	10 2	12 7	12 7	12 2	- -	- -	10 10	11 1	10 2	9 0	10 1	9 4	S.
25	14 10	13 9	13 2	15 0	14 7	10 3	12 5	12 8	12 2	- -	- -	10 11	11 3	10 2	8 11	9 10	9 6	S.
26	15 8	14 9	13 6	15 3	14 9	10 4	12 5	12 8	12 2	- -	- -	11 1	11 4	10 0	8 10	9 11	9 6	E.N.E.
27	15 2	14 4	13 6	15 3	14 9	10 5	12 8	12 8	12 2	- -	- -	11 2	11 6	10 0	8 9	9 9	9 6	N.E.
28	15 0	14 3	13 5	15 2	14 10	10 6	12 8	12 5	11 11	- -	- -	11 2	11 8	9 10	8 8	9 6	9 3	N.E.
29	14 11	14 2	13 5	15 3	14 9	10 4	12 6	12 5	11 11	- -	- -	11 1	11 7	9 8	8 8	9 3	9 1	N.E.
30	14 9	13 11	13 3	15 1	14 8	10 2	12 5	12 3	11 10	- -	- -	11 1	11 6	9 6	8 6	9 0	9 0	E.
31	14 8	13 9	13 1	14 11	14 7	10 0	12 3	12 2	11 9	- -	- -	11 1	11 5	9 2	8 5	8 9	8 10	S.W.

(1.) River Shannon Navigation.

Heights of Water on Lock Sills.

TABLE of the Heights of Water upon Lock Sills, from *Limerick* to *Lough Allen*—*continued.*

1832.		Park.		Annahbeg.		Errina.		Cussane.		Killaloe.		Hamilton.				Banagher.				Athlone.				Lanesborough, Lower Sill.		Cloondrah, Lower Sill.		Ruskey, Lower Sill.		Jamestown, Lower Sill.		Battle Bridge, Lower Sill.		Drumleague, Upper Sill.		Observations.
												Upper.		Lower.		Upper.		Lower.		Upper.		Lower.														
		Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.					Ft.	In.	Ft.	In.	Ft.	In	Ft.	In.	Ft.	In.	Ft.	In.	Wind.
Jan.	1	14	5	13	5	12	11	14	8	14	4	10	0	12	0	11	7	11	3	-	-	-	-	11	0	11	3	8	10	8	1	8	7	8	9	S.E. fair.
	2	14	0	13	4	12	9	14	6	14	3	9	8	11	10	11	6	11	3	-	-	-	-	11	0	11	1	8	6	8	1	8	4	8	5	S.E. fair.
	3	13	11	13	3	12	7	14	3	14	1	9	8	11	8	11	4	11	1	-	-	-	-	10	11	10	7	8	4	7	11	8	1	8	1	S.
	4	13	9	12	11	12	4	13	11	13	10	9	5	11	8	11	4	11	1	-	-	-	-	10	11	10	4	8	2	7	10	7	10	7	9	S.
	5	13	6	12	8	12	2	13	9	13	8	9	5	11	8	11	4	11	1	-	-	-	-	10	10	10	0	8	1	7	9	7	8	7	6	S.W.
	6	13	4	12	6	12	0	13	8	13	7	9	4	11	0	11	2	10	11	-	-	-	-	10	8	9	8	8	0	7	6	7	5	7	4	E. hazy.
	7	13	1	12	6	11	11	13	5	13	6	9	3	10	9	11	1	10	11	-	-	-	-	10	7	9	7	7	10	7	4	7	3	7	2	S.W. fair.
	8	13	0	12	3	11	8	13	4	13	3	9	3	10	9	11	0	10	9	-	-	-	-	10	6	9	8	7	9	7	2	7	2	7	0	E. fair.
	9	12	9	11	11	11	5	13	0	13	0	9	1	10	8	10	11	10	8	-	-	-	-	10	5	9	7	7	9	7	1	7	1	6	10	S.W. heavy rain.
	10	12	9	11	11	11	4	12	9	13	0	9	0	10	8	10	11	10	8	-	-	-	-	10	3	9	6	7	8	7	1	7	2	6	10	S.W.
	11	12	5	11	8	11	1	12	8	12	9	9	0	10	8	10	9	10	6	-	-	-	-	10	1	9	4	7	7	7	0	7	1	6	11	S.E.
	12	12	5	11	8	11	1	12	8	12	10	9	1	10	6	10	9	10	6	-	-	-	-	9	10	9	3	7	7	7	1	7	2	7	0	W.
	13	12	4	11	9	11	2	12	7	12	10	9	1	10	4	10	11	10	8	-	-	-	-	9	7	9	1	7	6	7	0	7	2	7	1	S.W.
	14	12	4	11	6	11	0	12	6	12	9	9	1	10	3	10	11	10	8	-	-	-	-	9	2	8	11	7	5	7	0	7	1	7	2	S.W.
	15	12	3	11	6	11	0	12	5	12	7	9	3	10	1	10	11	10	8	-	-	-	-	9	1	8	9	7	5	6	11	7	0	7	2	S.W.
	16	12	0	11	3	10	11	12	3	12	6	9	2	10	1	10	8	10	5	-	-	-	-	9	1	8	8	7	4	6	10	7	0	7	1	S.W.
	17	12	1	11	2	10	9	12	2	12	5	8	9	10	1	10	6	10	3	-	-	-	-	9	0	8	7	7	3	6	10	6	11	7	0	S.
	18	11	10	11	0	10	7	12	0	12	3	8	6	10	0	10	3	10	0	-	-	-	-	9	0	8	8	7	2	6	10	6	10	6	10	S.
	19	11	8	10	9	10	6	11	9	12	1	8	6	10	0	No account kept during this period		-	-	-	-	-	-	8	10	8	7	7	2	6	9	6	8	6	9	S.
	20	11	6	10	9	10	5	11	8	12	0	8	6	9	10			-	-	-	-	-	-	8	8	8	5	7	1	6	8	6	7	6	8	S.
	21	11	4	10	6	10	4	11	7	12	0	8	6	9	6			-	-	-	-	-	-	8	7	8	4	7	0	6	7	6	6	6	7	S.
	22	11	3	10	5	10	3	11	6	11	10	8	5	9	6			-	-	-	-	-	-	8	7	8	1	6	11	6	7	6	5	6	6	S.W.
	23	11	1	10	3	10	2	11	3	11	9	8	4	9	5			-	-	-	-	-	-	8	6	7	11	6	10	6	6	6	4	6	5	S.
	24	11	1	9	9	9	8	11	0	11	3	8	2	9	2			-	-	-	-	-	-	8	6	7	9	6	10	6	5	6	3	6	5	S.
	25	11	0	10	0	9	11	11	0	11	4	8	1	9	2			-	-	-	-	-	-	8	4	7	7	6	10	6	5	6	2	6	5	S.
	26	10	10	10	0	9	10	11	0	11	7	8	2	9	0			-	-	-	-	-	-	8	0	7	6	6	9	6	4	6	1	6	6	N.
	27	10	9	10	0	9	9	11	0	11	8	8	3	8	11			-	-	-	-	-	-	7	11	7	5	6	7	6	3	6	1	6	7	N.
	28	10	6	9	9	9	8	10	9	11	6	8	1	8	9			-	-	-	-	-	-	7	10	7	4	6	7	6	1	6	1	6	8	N E.
	29	10	6	9	9	9	7	10	8	11	4	8	1	8	9			-	-	-	-	-	-	7	8	7	4	6	6	6	0	5	11	6	8	N.W.
	30	10	6	9	6	9	7	10	6	11	3	8	0	8	8			-	-	-	-	-	-	7	7	7	3	6	6	6	0	5	10	6	9	S.
	31	10	3	9	6	9	6	10	5	11	2	7	11	8	6			-	-	-	-	-	-	7	6	7	3	6	5	6	0	5	10	6	10	S.W.

II.

(1) River Shannon Navigation.

Heights of Water on Lock Sills.

TABLE of the Heights of Water upon Lock Sills, from *Limerick* to *Lough Allen*—*continued.*

1832:		Park.	Annahbeg.	Errina.	Cussane.	Killaloe.	Hamilton.		Banagher.		Athlone.		Lanesborough, Lower Sill.	Cloondrah.	Ruskey,	Jamestown, Lower Sill.	Battle Bridge, Lower Sill.	Drumleague, Upper Sill.	Observations.
							Upper.	Lower.	Upper.	Lower.	Upper.	Lower.		Lower Sill.	Lower Sill.				
		Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.			Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft In.	Ft. In.	Wind.
Feb.	1	10 3	9 3	9 6	10 3	11 1	7 11	8 6	9 6	9 2	- -	- -	7 5	7 2	6 5	5 11	5 10	6 11	S.W.
	2	10 2	9 3	9 4	10 2	11 1	7 10	8 9	9 6	9 2	- -	- -	7 5	7 1	6 4	5 11	5 10	6 11	S.
	3	10 1	9 3	9 3	10 1	10 10	7 6	8 8	9 5	9 1	- -	- -	7 4	7 1	6 3	5 10	5 9	6 11	S.
	4	9 11	9 0	9 2	9 9	10 9	7 6	8 8	9 6	9 1	- -	- -	7 4	7 1	6 3	6 0	5 10	7 0	S.W.
	5	9 8	9 4	8 10	10 1	10 9	7 6	8 8	9 5	9 1	- -	- -	7 3	7 0	6 4	6 2	7 2	7 2	S.W.
	6	10 0	9 3	9 4	10 1	10 11	7 11	8 5	9 7	9 3	- -	- -	7 2	7 0	6 5	6 3	7 2	7 3	W.
	7	10 0	9 2	9 2	10 0	10 11	7 11	8 4	9 7	9 3	- -	- -	7 2	7 0	6 6	6 4	7 2	7 4	S.W.
	8	10 0	9 2	9 2	10 0	10 10	7 11	8 6	9 7	9 3	- -	- -	7 2	7 0	6 10	6 6	7 2	7 5	S.W.
	9	9 11	9 2	9 2	10 0	10 10	8 0	8 4	9 6	9 2	- -	- -	7 1	7 0	6 11	6 8	7 3	7 6	S.W.
	10	9 10	9 0	9 1	10 0	10 10	7 11	Gauge broken during this time.	9 6	9 2	- -	- -	7 1	7 0	7 1	6 8	7 3	7 4	S.
	11	9 10	9 0	9 0	10 1	10 10	7 10		9 5	9 1	- -	- -	7 1	7 0	7 2	6 9	7 3	7 2	E.
	12	9 10	9 0	9 0	9 9	10 9	7 8		9 5	9 1	- -	- -	7 1	7 0	7 2	6 8	7 2	7 0	E.
	13	9 9	8 9	8 11	9 8	10 9	7 8		9 5	9 1	- -	- -	7 1	7 0	7 1	6 8	7 2	6 10	S.W.
	14	9 7	8 9	8 10	9 8	10 8	7 8		9 5	9 1	- -	- -	7 0	7 0	7 0	6 9	7 0	6 9	S.
	15	9 6	8 9	8 10	9 7	10 7	7 7		9 4	9 0	- -	- -	7 0	7 0	7 0	6 9	7 0	6 8	S.W.
	16	9 6	8 6	8 10	9 7	10 4	7 7		9 4	9 0	- -	- -	7 0	7 1	7 1	6 9	7 0	6 8	E.
	17	9 9	8 6	8 9	9 8	10 6	7 7		9 4	9 0	- -	- -	7 0	7 1	7 2	6 8	6 11	6 7	S.W.
	18	9 8	8 6	8 9	9 6	10 6	7 7		9 4	9 0	- -	- -	6 11	7 1	7 1	6 8	6 11	6 7	S.
	19	9 8	8 6	8 9	9 6	10 6	7 7		9 2	8 10	- -	- -	6 11	7 1	7 0	6 7	6 9	6 7	E.
	20	9 6	8 6	8 9	9 5	10 5	7 6		9 2	8 10	- -	- -	7 0	7 1	6 11	6 6	6 8	6 6	S.
	21	9 6	8 6	8 7	9 5	10 4	7 6		9 2	8 10	- -	- -	7 0	7 1	6 10	6 6	6 7	6 6	S.
	22	9 5	8 6	8 6	9 3	10 4	7 6		9 2	8 10	- -	- -	6 11	7 1	6 10	6 6	6 6	6 7	S.
	23	9 4	8 6	8 6	9 3	10 3	7 5		9 2	8 10	- -	- -	6 11	7 1	6 9	6 5	6 5	6 7	S.
	24	9 4	8 4	8 6	9 3	10 1	7 5		8 1	8 9	- -	- -	6 11	7 1	6 8	6 4	6 5	6 8	S.
	25	9 7	8 8	8 6	9 4	10 1	7 5		8 1	8 9	- -	- -	6 11	7 0	6 9	6 4	6 6	6 9	N.
	26	9 5	8 5	8 6	9 3	During this time the gauge was down. New gates fixing.	7 5		9 0	8 8	- -	- -	6 11	7 0	6 8	6 3	6 5	6 9	N.W.
	27	9 4	8 3	8 6	9 2		7 5		9 0	8 8	- -	- -	6 11	6 11	6 7	6 3	6 4	6 9	N.
	28	9 3	8 3	8 5	9 2		7 5		9 0	8 8	- -	- -	6 11	6 11	6 7	6 2	6 3	6 10	S.
	29	9 2	8 3	8 4	9 1		7 4	7 4	8 11	8 7	- -	- -	6 11	6 11	6 7	6 2	6 3	6 10	S.

(1.) River Shannon Navigation.

Heights of Water on Lock Sills.

TABLE of the Heights of Water upon Lock Sills, from *Limerick* to *Lough Allen*—*continued.*

1832:	Park.		Annahbeg.		Errina.		Cussane.		Killaloe.		Hamilton.				Banagher.				Athlone.				Lanesborough, Lower Sill.		Clondrah, Lower Sill.		Ruskey, Lower Sill.		Jamestown, Lower Sill.		Battle Bridge, Lower Sill.		Drumleague, Upper Sill.		Observations.
											Upper.		Lower.		Upper.		Lower.		Upper.		Lower.														
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Wind.
March 1	9	2	8	2	8	3	9	1	9	10	7	4	7	4	8	10	8	6	-	-	-	-	6	10	6	9	6	7	6	1	6	2	6	9	S.
2	9	1	8	2	8	2	9	1	9	10	7	4	7	4	8	10	8	6	-	-	-	-	6	10	6	9	6	6	6	2	6	2	6	8	S.E.
3	9	0	8	2	8	2	9	2	9	10	7	4	7	4	9	2	8	10	-	-	-	-	6	10	6	8	6	6	6	3	6	3	6	7	S.W. rainy.
4	9	0	8	2	8	2	9	0	9	11	7	4	7	4	9	2	8	10	-	-	-	-	6	10	6	9	6	6	6	4	6	5	6	6	S.E.
5	9	6	8	6	8	3	9	2	9	10	7	6	7	6	9	4	9	0	-	-	-	-	6	10	6	10	6	7	6	5	6	5	6	7	S.W. fair.
6	10	4	9	6	8	4	9	4	9	11	7	7	7	10	9	6	9	2	-	-	-	-	6	11	6	11	6	7	6	5	6	8	6	9	S.W. rainy.
7	9	9	8	9	8	6	9	6	10	2	7	10	8	0	9	7	9	3	-	-	-	-	7	0	6	11	6	10	6	5	6	9	6	10	S.W. fair.
8	9	10	9	0	8	9	9	9	10	6	8	2	8	2	9	9	9	5	-	-	-	-	6	11	7	1	7	3	6	6	6	10	6	11	S.W.
9	9	10	9	0	8	9	9	10	10	6	8	2	8	2	9	10	9	6	-	-	-	-	7	1	7	2	7	3	6	8	6	10	6	11	N.E.
10	9	11	9	2	8	10	10	0	10	7	8	0	8	1	9	9	9	5	-	-	-	-	7	2	7	4	7	3	6	9	6	11	7	0	S.E. drizzly.
11	10	0	9	0	8	11	10	0	10	8	8	0	8	2	9	9	9	5	-	-	-	-	7	2	7	5	7	1	6	8	6	11	7	2	N.E. fair.
12	10	1	9	0	8	11	10	0	10	8	8	0	8	3	9	8	9	4	-	-	-	-	7	2	7	5	7	1	6	7	6	11	7	2	N.E.
13	10	0	9	1	9	0	10	0	10	7	7	11	8	3	9	8	9	4	-	-	-	-	7	2	7	5	7	0	6	7	6	10	7	1	S.W. rainy.
14	10	1	9	3	9	1	10	0	10	7	7	10	8	3	9	7	9	3	-	-	-	-	7	1	7	4	7	0	6	7	6	10	7	0	S.W.
15	10	0	9	3	9	0	10	0	10	6	7	9	8	3	9	6	9	2	-	-	-	-	7	1	7	4	6	11	6	6	6	9	6	11	S.W. fair.
16	10	0	9	0	8	11	10	0	10	6	7	8	8	6	9	6	9	2	-	-	-	-	7	1	7	3	6	10	6	6	6	10	6	11	S.W. rainy.
17	10	0	9	2	9	0	10	0	10	7	7	8	8	6	9	5	9	1	-	-	-	-	7	1	7	3	6	11	6	6	6	11	6	11	S.W. fair.
18	10	0	9	3	8	11	9	11	10	6	7	8	8	6	9	5	9	1	-	-	-	-	7	1	7	5	6	11	6	5	6	11	6	10	N.E. rainy.
19	10	0	9	3	8	11	9	10	10	6	7	8	8	6	9	4	9	0	-	-	-	-	7	0	7	4	7	0	6	5	7	0	6	9	W. fair.
20	9	11	9	3	8	10	9	10	10	6	7	9	8	1	9	2	-	-	-	-	-	-	7	0	7	4	7	0	6	6	7	2	6	8	W.
21	9	11	8	9	8	10	9	9	10	5	7	7	8	2	9	2	8	10	-	-	-	-	7	0	7	4	7	0	6	7	7	2	6	8	W.
22	9	10	8	9	8	9	9	9	10	8	7	7	8	2	9	2	8	10	-	-	-	-	7	0	7	3	6	11	6	7	7	2	6	8	S.W.
23	9	10	8	9	8	10	9	9	10	5	7	8	8	1	9	2	8	10	-	-	-	-	7	0	7	3	6	11	6	8	7	1	6	9	N.
24	9	9	8	9	8	10	9	9	10	6	7	8	7	9	9	2	8	10	-	-	-	-	7	0	7	2	7	0	6	8	7	1	6	10	N.W.
25	9	8	8	9	8	9	9	10	10	4	7	7	7	10	No account kept during this time.		New gates fixing.		-	-	-	-	7	0	7	1	6	11	6	8	7	0	6	11	N.W.
26	9	8	8	9	8	9	9	7	10	3	7	7	7	10					-	-	-	-	7	0	7	1	6	10	6	7	6	11	7	1	W.
27	9	7	8	7	8	8	9	6	10	3	7	6	7	10					-	-	-	-	6	11	7	1	6	10	6	7	6	10	7	3	S.W.
28	9	7	8	6	8	8	9	5	10	3	7	6	7	9					-	-	-	-	6	11	7	0	6	9	6	6	6	9	7	3	S.W.
29	9	6	8	6	8	7	9	4	10	2	7	5	7	8					-	-	-	-	6	11	7	0	6	8	6	5	6	7	7	2	N.
30	9	6	8	4	8	7	9	4	10	2	7	5	7	8					-	-	-	-	6	11	6	11	6	8	6	4	6	6	7	0	N.
31	9	6	8	4	8	6	9	3	-	-	7	4	7	6					-	-	-	-	6	11	6	11	6	7	6	3	6	5	6	10	W.

II.

(1.) River Shannon Navigation.

Heights of Water on Lock Sills.

TABLE of the Heights of Water upon Lock Sills, from *Limerick* to *Lough Allen*—continued.

1832:	Park.		Annahbeg.		Errina.		Cussane.		Killaloe.		Hamilton.				Banagher.				Athlone.				Lanesborough, Lower Sill.		Cloondrah, Lower Sill		Ruskey.		Jamestown, Lower Sill.		Battle Bridge, Lower Sill.		Drumleague, Upper Sill.		Observations
											Upper.		Lower.		Upper.		Lower.		Upper.		Lower.						Lower Sill.								
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft	In.	Ft.	In	Ft.	In.	Ft.	In.					Ft.	In.	Ft	In.	Ft.	In.	Ft.	In.	Ft	In.	Ft.	In.	Wind
April 1	9	4	8	4	8	5	9	2	10	1	7	3	7	6	No account kept during this period		New gates were fixing		-	-	-	-	6	11	6	10	6	7	6	2	6	4	6	6	W.
2	9	3	8	2	8	4	9	2	9	11	7	3	7	6					-	-	-	-	6	10	6	10	6	6	6	1	6	3	6	6	S.
3	9	0	8	2	8	4	9	1	9	11	7	3	7	6					-	-	-	-	6	10	6	9	6	6	6	1	6	2	6	5	S.
4	8	11	8	0	8	3	9	0	9	11	7	3	7	3					-	-	-	-	6	9	6	8	6	6	6	0	6	0	6	5	S.
5	8	9	8	0	8	3	9	0	9	11	7	3	7	3					-	-	-	-	6	9	6	7	6	6	5	10	6	0	6	4	S.
6	8	8	8	0	8	2	8	11	9	10	7	2	7	2					-	-	-	-	6	8	6	6	6	5	5	10	5	11	6	4	E.
7	8	8	8	0	8	2	8	10	9	10	7	1	7	1					-	-	-	-	6	8	6	5	6	4	5	9	5	9	6	3	N.
8	8	7	8	0	8	1	8	10	9	8	7	0	7	0					-	-	-	-	6	8	6	4	6	3	5	6	5	7	6	3	N.
9	8	7	7	9	8	0	8	9	9	7	7	1	7	0					-	-	-	-	6	7	6	2	6	2	5	6	5	6	6	2	N.
10	8	7	7	9	8	0	8	8	9	8	7	0	7	0					-	-	-	-	6	6	6	2	6	0	5	6	5	5	6	1	E.S.E.
11	8	7	7	9	7	11	8	7	9	7	6	9	6	8					-	-	-	-	6	6	6	2	5	10	5	4	5	4	6	0	E.S.E.
12	8	6	7	6	7	11	8	6	9	7	7	0	6	11					-	-	-	-	6	5	6	2	5	9	5	3	5	3	6	0	E.S.E.
13	8	6	7	3	7	10	8	5	9	6	6	10	6	9					-	-	-	-	6	5	6	1	5	8	5	1	5	2	6	0	E.S.E.
14	8	6	7	2	7	10	8	4	9	5	6	10	6	9					-	-	-	-	6	4	6	1	5	7	5	1	5	1	5	11	E.S.E.
15	8	5	7	2	7	8	8	4	9	5	6	10	6	8					-	-	-	-	6	4	6	1	5	6	5	0	5	1	5	11	W.
16	8	4	7	2	7	8	8	3	9	4	6	9	6	8					-	-	-	-	6	3	6	1	5	6	5	0	5	0	5	10	W.
17	8	3	7	2	7	8	8	3	9	3	6	9	6	8					-	-	-	-	6	3	6	1	5	7	5	0	5	10	5	10	S.W.
18	8	3	7	0	7	7	8	3	9	3	6	9	6	8					-	-	-	-	6	3	6	2	5	8	5	1	5	9	6	0	W.
19	8	3	7	0	7	7	8	3	9	2	6	10	6	8					-	-	-	-	6	2	6	2	5	10	5	2	6	2	6	3	S.W.
20	8	4	7	6	7	7	8	2	9	3	7	0	6	10					-	-	-	-	6	2	6	3	6	0	5	4	6	5	6	6	W.
21	8	6	7	6	7	7	8	4	9	3	7	1	6	9					-	-	-	-	6	2	6	3	6	2	5	7	6	6	6	9	W.S.W.
22	8	5	7	4	7	8	8	4	9	3	7	2	6	10					-	-	-	-	6	3	6	4	6	3	5	8	6	7	6	10	S.W.
23	8	7	7	9	7	8	8	5	9	4	7	3	6	11					-	-	-	-	6	3	6	4	6	5	5	9	7	0	7	0	S.W.
24	8	6	7	4	7	8	8	6	9	5	7	3	6	10	8	11	8	4	-	-	-	-	6	3	6	5	6	5	5	11	6	11	7	4	S.W.
25	8	6	7	4	7	8	8	6	9	6	7	3	6	10	8	10	8	4	-	-	-	-	6	3	6	5	6	6	6	0	6	10	7	6	N.W.
26	8	6	7	4	7	9	8	6	9	6	7	3	6	9	8	10	8	4	-	-	-	-	6	2	6	5	6	6	6	1	6	9	7	8	N.
27	8	6	7	4	7	9	8	6	9	6	7	2	6	10	8	8	8	2	-	-	-	-	6	2	6	6	6	7	6	2	6	8	7	8	S.E.
28	8	6	7	4	7	9	8	6	9	6	7	1	6	8	8	8	8	2	-	-	-	-	6	2	6	6	6	7	6	2	6	7	7	6	N.E.
29	8	7	7	4	7	9	8	6	9	5	7	1	6	10	8	7	8	1	-	-	-	-	6	2	6	6	6	6	6	2	6	6	7	4	N.E.
30	8	7	7	4	7	9	8	6	9	5	6	11	6	9	8	7	8	1	-	-	-	-	6	2	6	6	6	6	6	2	6	6	7	2	N.E.

(1.) River Shannon Navigation.

Heights of Water on Lock Sills.

TABLE of the Heights of Water upon Lock Sills, from *Limerick* to *Lough Allen*—*continued.*

1832 :	Park.		Annahbeg.		Errina.		Cussane.		Killaloe.		Hamilton.				Banagher.				Athlone.				Lanesborough, Lower Sill.		Cloondrah, Lower Sill.		Ruskey, Lower Sill		Jamestown, Lower Sill.		Battle Bridge, Lower Sill.		Drumleague, Upper Sill.		Observations.
											Upper.		Lower.		Upper.		Lower.		Upper.		Lower.														
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.					Ft.	In.	Ft	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Wind.
May 1	8	8	7	4	7	9	8	6	9	5	-	-	-	-	8	7	8	1	-	-	-	-	6	2	6	6	6	5	6	3	6	3	7	0	N.E.
2	8	8	7	4	7	10	8	6	9	5	6	11	6	9	8	7	8	1	-	-	-	-	6	2	6	6	6	6	6	3	6	2	6	10	N.E.
3	9	3	8	0	7	10	8	6	9	6	7	1	6	9	8	7	8	1	-	-	-	-	6	2	6	5	6	7	6	1	6	1	6	8	N.E.
4	9	3	7	4	7	10	8	6	9	6	7	1	6	11	8	6	8	0	-	-	-	-	6	3	6	5	6	6	6	0	6	0	6	6	N.E.
5	9	1	7	4	7	9	8	6	9	6	7	1	7	0	8	6	8	0	-	-	-	-	6	3	6	5	6	5	5	9	5	11	6	4	N.E.
6	9	0	7	4	7	9	8	6	9	5	7	0	7	0	8	5	7	11	-	-	-	-	6	3	6	5	6	4	5	9	5	9	6	4	S.W.
7	8	9	7	4	7	9	8	6	9	5	7	0	7	0	8	5	7	11	-	-	-	-	6	2	6	5	6	3	5	8	5	7	6	3	S.W.
8	8	6	7	3	7	9	8	5	9	5	6	10	6	9	8	5	7	11	-	-	-	-	6	2	6	4	6	2	5	8	5	6	6	3	N.E.
9	8	4	7	0	7	8	8	5	9	6	6	10	6	6	8	4	7	10	-	-	-	-	6	2	6	4	6	1	5	6	5	5	6	3	N.E.
10	8	4	7	0	7	8	8	4	9	4	6	8	6	7	8	3	7	9	-	-	-	-	6	1	6	4	6	0	5	5	5	4	6	2	N.E.
11	8	3	7	0	7	7	8	4	9	4	6	8	6	7	8	3	7	9	-	-	-	-	6	1	6	4	5	11	5	5	5	3	6	2	N.E.
12	8	3	7	0	7	7	8	3	9	3	6	7	6	6	8	2	7	8	-	-	-	-	6	1	6	3	5	10	5	4	5	2	6	1	N.E.
13	8	2	7	0	7	7	8	3	9	3	6	7	6	6	8	2	7	8	-	-	-	-	6	1	6	3	5	10	5	3	5	1	6	1	N.E.
14	8	2	7	0	7	7	8	3	9	2	6	8	6	6	8	1	7	7	-	-	-	-	6	0	6	3	5	9	5	2	5	0	6	0	N.
15	8	2	6	10	7	6	8	2	9	1	6	7	6	6	8	1	7	7	-	-	-	-	6	0	6	2	5	8	5	1	4	10	6	0	N.E.
16	8	1	6	10	7	6	8	2	9	1	6	7	6	3	8	1	7	7	-	-	-	-	5	11	6	2	5	7	4	11	4	9	6	0	E.
17	8	1	6	10	7	6	8	1	9	0	6	6	6	3	8	0	7	6	-	-	-	-	5	11	6	1	5	6	4	10	4	8	5	11	N.E.
18	8	0	6	10	7	5	8	1	9	0	6	5	6	3	8	0	7	6	-	-	-	-	5	11	6	1	5	5	4	9	4	7	5	10	N.E.
19	8	0	6	10	7	5	8	0	9	0	6	4	6	3	7	9	7	3	-	-	-	-	5	11	6	1	5	5	4	8	4	6	5	10	N.E.
20	7	11	6	10	7	3	7	10	8	11	6	3	6	3	7	9	7	3	-	-	-	-	5	10	6	0	5	4	4	8	4	6	5	9	S.W.
21	7	8	7	6	7	2	7	10	8	10	6	3	6	3	7	9	7	3	-	-	-	-	5	10	6	0	5	3	4	8	4	5	5	8	S.W.
22	7	8	7	6	7	2	7	10	8	10	6	3	6	3	7	9	7	3	-	-	-	-	5	9	5	11	5	3	4	8	4	5	5	8	N.W.
23	7	7	7	4	7	2	7	9	8	9	6	3	6	2	7	9	7	3	-	-	-	-	5	9	5	11	5	2	4	7	4	4	5	7	N.W.
24	7	6	7	4	7	1	7	8	8	9	6	3	6	1	7	9	7	3	-	-	-	-	5	9	5	10	5	1	4	7	4	4	5	6	W.N.W.
25	7	7	7	4	7	1	7	7	8	9	6	3	6	1	7	8	7	2	-	-	-	-	5	9	5	10	5	1	4	6	4	4	5	6	N.W.
26	7	6	7	4	7	0	7	6	8	9	6	3	6	0	7	7	7	1	-	-	-	-	5	9	5	9	5	0	4	5	4	4	5	5	N.W.
27	6	6	7	0	7	0	7	6	8	8	6	3	6	0	7	6	7	0	-	-	-	-	5	8	5	9	5	0	4	5	4	3	5	5	S.S.W.
28	7	6	7	0	6	11	7	5	8	7	6	2	6	0	7	6	7	0	-	-	-	-	5	8	5	8	5	0	4	5	4	3	5	5	S.S.W.
29	7	6	7	0	6	11	7	5	8	6	6	1	5	11	7	6	7	0	-	-	-	-	5	8	5	7	5	0	4	5	4	2	5	5	W S W.
30	7	5	6	10	6	10	7	5	8	5	6	1	5	11	7	5	6	11	-	-	-	-	5	7	5	7	5	0	4	4	4	2	5	4	S.W.
31	7	5	6	10	6	10	7	4	8	6	6	1	5	11	7	5	6	11	-	-	-	-	5	6	5	6	5	0	4	3	4	4	5	4	N.W.

TABLE of the Heights of Water upon Lock Sills, from *Limerick* to *Lough Allen*—*continued.*

1832:	Park.	Annahbeg.	Errina.	Cussane.	Killaloe.	Hamilton.		Banagher.		Athlone.		Lanesborough, Lower Sill.	Cloondrah.	Ruskey.	Jamestown, Lower Sill.	Battle Bridge, Lower Sill.	Drumleague, Upper Sill.	Observations
						Upper.	Lower.	Upper.	Lower.	Upper.	Lower.		Lower Sill.	Lower Sill.				
	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.			Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Wind.
June 1	7 5	6 9	6 10	7 4	8 5	6 1	5 10	7 5	6 11	- -	- -	5 6	5 5	5 1	4 3	4 2	5 4	S.W.
2	7 5	6 9	6 10	7 3	8 5	6 1	5 9	7 4	6 10	- -	- -	5 5	5 5	5 1	4 3	4 3	5 4	S.W.
3	7 4	6 9	6 9	7 3	8 4	6 1	5 6	7 4	6 10	- -	- -	5 5	5 5	5 1	4 3	4 2	5 5	S.W.
4	7 0	6 9	6 9	7 2	8 4	6 1	5 6	7 4	6 10	- -	- -	5 5	5 4	5 1	4 3	4 2	5 5	N.E.
5	6 10	6 9	6 9	7 2	8 4	6 0	5 6	7 4	6 10	- -	- -	5 4	5 4	5 0	4 3	4 2	5 5	E.
6	6 9	6 9	6 9	7 1	8 4	6 0	5 6	7 4	6 10	- -	- -	5 4	5 4	5 0	4 2	4 1	5 6	N.E.
7	6 7	6 9	6 9	7 1	8 3	6 0	5 6	7 4	6 10	- -	- -	5 4	5 4	5 0	4 1	4 1	5 5	N.E.
8	6 6	6 9	6 9	7 1	8 3	6 0	5 6	7 4	6 10	- -	- -	5 4	5 3	4 11	4 1	4 1	5 5	N.E.
9	6 6	6 9	6 9	7 1	8 2	6 1	5 7	7 4	6 10	- -	- -	5 3	5 3	4 11	4 0	4 1	5 5	W.S.W.
10	6 7	6 9	6 9	7 0	8 3	6 1	5 7	7 4	6 10	- -	- -	5 3	5 3	5 0	4 1	4 1	5 5	N.E.
11	6 8	7 0	6 9	7 0	8 3	6 2	5 7	7 3	6 9	- -	- -	5 3	5 3	5 1	4 3	4 3	5 5	S.
12	6 8	6 10	6 9	7 0	8 4	6 4	5 7	7 9	7 3	- -	- -	5 3	5 3	5 2	4 4	4 6	5 7	S.
13	6 10	6 9	6 9	7 0	8 4	6 5	5 9	7 9	7 3	- -	- -	5 4	5 3	5 3	4 4	4 9	5 9	S S.W.
14	6 11	6 9	6 9	6 11	8 4	6 6	5 11	7 10	7 4	- -	- -	5 4	5 4	5 4	4 5	5 4	5 10	
15	7 1	7 0	6 9	6 11	8 4	6 6	5 11	7 10	7 4	- -	- -	5 4	5 4	5 5	4 5	5 6	5 11	
16	7 2	7 0	6 10	6 11	8 5	6 5	5 11	7 10	7 4	- -	- -	5 4	5 4	5 5	4 6	5 7	5 11	
17	7 1	7 6	6 11	6 11	8 4	6 5	5 11	7 9	7 3	- -	- -	5 4	5 4	5 5	4 6	5 5	6 0	
18	6 11	7 4	6 11	7 0	8 4	6 5	5 11	7 9	7 3	- -	- -	5 4	5 4	5 4	4 7	5 3	6 0	S.W.
19	6 10	7 2	6 11	7 0	8 5	6 4	5 11	7 8	7 2	- -	- -	5 3	5 5	5 4	4 7	5 2	6 0	S.W.
20	6 9	7 2	6 11	6 11	8 5	6 4	5 9	7 8	7 2	- -	- -	5 4	5 5	5 5	4 7	5 1	6 0	S.W.
21	6 7	7 2	6 10	6 11	8 5	6 4	5 10	7 8	7 2	- -	- -	5 4	5 5	5 6	4 8	5 0	6 1	
22	6 6	7 2	6 10	6 10	8 5	6 4	5 10	7 7	7 1	- -	- -	5 4	5 5	5 6	4 8	5 3	6 1	S.W.
23	6 5	7 2	6 9	6 10	8 4	6 4	5 10	7 7	7 1	- -	- -	5 5	5 4	5 6	4 9	5 2	6 2	W.
24	6 5	7 0	6 9	6 10	8 4	6 3	5 9	7 6	7 1	- -	- -	5 5	5 4	5 6	4 8	5 1	6 1	S.
25	6 4	6 9	6 9	6 10	8 4	6 3	5 9	7 6	7 0	- -	- -	5 4	5 4	5 5	4 7	5 0	6 1	W.
26	6 4	6 9	6 9	6 9	8 4	6 3	5 9	7 6	7 0	- -	- -	5 4	5 4	5 4	4 7	4 11	6 1	W.
27	6 6	6 9	6 9	6 9	8 3	6 2	5 8	7 6	7 0	- -	- -	5 4	5 4	5 3	4 7	4 9	6 0	W.
28	6 7	6 9	6 9	6 9	8 3	6 1	5 7	7 5	6 11	- -	- -	5 4	5 3	5 2	4 6	4 9	5 11	W.
29	6 9	6 9	6 8	6 9	8 3	6 1	5 7	7 5	6 11	- -	- -	5 3	5 3	5 2	4 6	4 8	5 11	W.
30	6 10	6 9	6 8	6 9	8 2	6 1	5 7	7 5	6 11	- -	- -	5 3	5 3	5 1	4 6	4 8	5 10	W.

(1.) River Shannon Navigation.

Heights of Water on Lock Sills.

TABLE of the Heights of Water upon Lock Sills, from *Limerick* to *Lough Allen*—*continued.*

1832 :		Park.		Annahbeg.		Errina.		Cussane.		Killaloe.		Hamilton.				Banagher.				Athlone.				Lanesborough, Lower Sill.		Cloondrah.		Ruskey,		Jamestown, Lower Sill.		Battle Bridge, Lower Sill.		Drumleague, Upper Sill.		Observations.
												Upper		Lower.		Upper.		Lower.		Upper.		Lower.				Lower Sill.		Lower Sill.								
		Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Wind.
July	1	6	11	6	9	6	8	6	9	8	2	6	1	5	6	7	5	6	11	-	-	-	-	5	3	5	3	5	0	4	6	4	7	5	8	
	2	6	11	6	9	6	8	6	8	8	2	6	1	5	6	7	5	6	11	-	-	-	-	5	3	5	3	5	0	4	6	4	6	5	9	N.W.
	3	6	11	6	9	6	7	6	8	8	2	6	1	5	6	7	4	6	10	-	-	-	-	5	2	5	2	4	11	4	5	4	5	5	10	S.
	4	6	11	6	9	6	7	6	8	8	1	6	1	5	6	7	4	6	10	-	-	-	-	5	2	5	2	4	11	4	4	4	4	5	11	
	5	6	11	6	9	6	6	6	8	8	1	6	0	5	6	7	4	0	0	-	-	-	-	5	2	5	2	5	0	4	4	4	4	5	11	
	6	6	11	7	0	6	6	6	8	8	0	5	11	5	6	7	3	6	9	-	-	-	-	5	2	5	1	5	0	4	3	4	4	5	11	W.
	7	7	0	7	0	6	6	6	8	8	0	6	0	5	6	7	3	6	9	-	-	-	-	5	2	5	1	4	11	4	3	4	4	6	0	S.W.
	8	7	0	7	0	6	6	6	7	7	11	6	0	5	6	7	3	6	9	-	-	-	-	5	3	5	1	4	11	4	4	4	5	6	0	S.W.
	9	6	11	7	0	6	6	6	7	8	0	5	11	5	7	7	3	6	9	-	-	-	-	5	3	5	1	4	11	4	4	4	5	5	11	S.W.
	10	6	11	7	0	6	6	6	7	8	0	6	0	5	7	7	3	6	9	-	-	-	-	5	3	5	0	4	10	4	4	4	5	5	10	W.S.W.
	11	6	10	7	0	6	6	6	7	8	0	6	0	5	7	7	3	6	9	-	-	-	-	5	3	5	0	4	10	4	3	4	4	5	10	W.S.W.
	12	6	10	6	10	6	6	6	7	8	0	6	0	5	5	7	3	6	9	-	-	-	-	5	3	5	0	4	10	4	3	4	4	5	9	W.
	13	6	10	6	10	6	7	6	7	8	0	6	0	5	5	7	3	6	9	5	6	5	7	5	2	4	11	4	9	4	3	4	4	5	9	N.
	14	6	10	6	10	6	6	6	6	8	0	6	0	5	5	7	3	6	9	5	6	5	3	5	2	4	11	4	9	4	2	4	3	5	9	N.N.W.
	15	6	11	6	9	6	6	6	6	7	11	6	1	5	5	7	4	6	10	5	6	5	7	5	2	4	10	4	9	4	1	4	2	5	8	N.W.
	16	6	9	6	9	6	6	6	6	7	11	6	1	5	5	7	4	6	10	5	6	5	7	5	2	4	10	4	9	4	1	4	2	5	8	N.
	17	6	9	6	9	6	6	6	6	7	11	6	1	5	5	7	4	6	10	5	6	5	7	5	2	4	9	4	8	4	0	4	1	5	7	N.
	18	6	10	6	9	6	6	6	5	8	0	6	1	5	5	7	4	6	10	5	6	5	6	5	1	4	8	4	8	4	1	4	1	5	7	N.
	19	6	9	6	9	6	5	6	5	7	11	6	0	5	4	7	3	6	9	5	6	5	4	5	1	4	6	4	8	4	1	4	0	5	6	N.E.
	20	6	8	6	9	6	5	6	5	7	11	5	11	5	4	7	3	6	9	5	6	5	4	5	0	4	5	4	8	4	0	4	0	5	5	N.E.
	21	6	7	6	9	6	5	6	5	7	11	5	11	5	3	7	2	6	8	5	6	5	4	5	0	4	6	4	7	4	0	4	0	5	4	N.E.
	22	6	7	6	9	6	5	6	5	7	10	5	11	5	2	7	2	6	8	5	6	5	4	4	11	4	6	4	7	4	0	3	11	5	4	N.
	23	6	7	6	6	6	4	6	5	7	9	5	11	5	2	7	2	6	8	5	6	5	4	4	10	4	6	4	7	4	0	3	10	5	4	N.
	24	6	7	6	6	6	4	6	5	7	9	5	10	5	0	7	1	6	7	5	6	5	4	4	10	4	5	4	7	4	0	3	10	5	4	N.
	25	6	6	6	6	6	4	6	5	7	9	5	10	5	0	7	1	6	7	5	3	5	4	4	10	4	5	4	6	4	0	3	9	5	4	N.
	26	6	6	6	6	6	4	6	5	7	9	5	10	5	0	7	1	6	7	5	3	5	4	4	10	4	5	4	6	4	0	3	8	5	4	N.
	27	6	6	6	6	6	3	6	6	7	8	5	9	5	0	7	0	6	6	5	3	5	4	4	9	4	5	4	6	4	0	3	7	5	4	N.
	28	6	7	6	6	6	3	6	6	7	8	5	9	5	0	7	0	6	6	5	3	5	3	4	9	4	5	4	6	4	0	3	7	5	4	N.
	29	6	7	6	6	6	3	6	5	7	8	5	9	5	0	7	0	6	6	5	3	5	3	4	9	4	4	4	6	4	0	3	7	5	3	N.
	30	6	6	6	6	6	3	6	4	7	7	5	8	5	0	7	0	6	6	5	3	5	3	4	9	4	4	4	6	4	0	3	6	5	3	N.
	31	6	5	6	9	6	3	6	4	7	7	5	8	5	0	7	0	6	6	5	3	5	2	4	9	4	4	4	6	4	0	3	6	5	2	N.

II.
(1.) River Shannon Navigation.

Heights of Water on Lock Sills.

TABLE of the Heights of Water upon Lock Sills, from *Limerick* to *Lough Allen*—*continued.*

1832:	Park.		Annahbeg.		Errina.		Cossane.		Killaloe.		Hamilton.				Banagher.				Athlone.				Lanesborough, Lower Sill.		Cloondrah,		Ruskey,		Jamestown, Lower Sill		Battle Bridge, Lower Sill		Drumleague, Upper Sill.		Observations
											Upper.		Lower.		Upper.		Lower.		Upper.		Lower.				Lower Sill.		Lower Sill.								
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In	Ft.	In.	Ft.	In.	Ft.	In	Ft	In	Wind
Aug. 1	6	5	6	6	6	2	6	4	7	7	5	8	5	0	6	10	6	4	5	2	5	1	4	8	-	-	4	6	4	0	3	6	5	4	S.E.
2	6	5	6	6	6	2	6	4	7	7	5	8	4	11	6	10	6	4	5	2	5	1	4	8	No account kept during this time.		4	6	4	0	3	6	5	4	N.E.
3	6	4	6	6	6	2	6	4	7	6	5	7	4	11	6	10	6	4	5	1	5	1	4	8			4	6	3	11	3	6	5	4	N.N.E.
4	6	4	6	6	6	6	6	4	7	6	5	7	4	11	6	10	6	4	5	0	5	0	4	8			4	5	3	11	3	6	5	4	S.
5	6	4	6	3	6	2	6	4	7	6	5	8	4	11	6	10	6	4	5	1	5	0	4	8			4	5	3	11	3	6	5	4	S.W.
6	6	6	6	3	6	2	6	4	7	6	5	8	5	1	6	10	6	4	5	1	5	0	4	8			4	5	3	10	3	6	5	4	S.W.
7	6	6	6	6	6	1	6	5	7	6	5	7	5	1	6	10	6	4	5	1	5	0	4	8			4	5	3	10	3	6	5	3	S.W.
8	6	5	6	3	6	1	6	5	7	7	5	7	5	0	6	8	6	4	5	1	5	0	4	9			4	4	3	10	3	6	5	3	S.
9	6	4	6	3	6	1	6	4	7	6	5	7	5	0	6	9	6	3	5	1	5	0	4	9			4	4	3	10	3	6	5	2	S.
10	6	4	6	3	6	1	6	3	7	6	5	7	5	0	6	9	6	3	5	1	5	1	4	9			4	4	3	10	3	6	5	2	W.
11	6	3	6	3	6	1	6	3	7	6	5	6	5	0	6	9	6	3	5	1	5	3	4	9			4	4	3	10	3	6	5	2	W.S.W.
12	6	3	6	3	6	1	6	3	7	6	5	7	5	0	6	9	6	3	5	1	5	2	4	9			4	4	3	10	3	6	5	2	W.S.W.
13	6	3	6	3	6	1	6	3	7	6	5	7	5	0	6	9	6	3	5	0	5	1	4	8			4	4	3	10	3	6	5	2	W.
14	6	3	6	3	6	0	6	3	7	6	5	6	5	0	6	9	6	3	5	0	5	1	4	8	4	2	4	3	3	10	3	5	5	1	S.
15	6	2	6	3	6	0	6	3	7	6	5	6	4	11	6	9	6	3	4	11	5	0	4	8	4	2	4	3	3	10	3	5	5	1	S.E.
16	6	2	6	3	6	0	6	3	7	6	5	6	5	0	6	9	6	3	4	11	5	0	4	6	4	1	4	3	3	9	3	4	5	1	W.
17	6	3	6	6	6	0	6	3	7	6	5	6	5	0	6	9	6	3	4	11	5	0	* Upper Gates, 4. 5. 4	7	* Upper Gates, 5. 10. 4	1	4	3	3	9	3	4	5	1	S.
18	6	3	6	6	6	0	6	3	7	6	5	6	5	0	6	9	6	3	4	11	5	0	4	7	4	1	4	3	3	9	3	6	5	1	S.
19	6	4	6	6	6	0	6	3	7	6	5	6	5	0	6	9	6	3	4	11	5	0	4	6	4	2	4	4	3	9	3	9	5	1	S.
20	6	5	6	6	6	1	6	3	7	6	5	8	5	0	6	9	6	3	4	11	5	0	4	6	4	2	4	4	3	10	3	9	5	1	S.
21	6	6	6	3	6	1	6	3	7	6	5	8	0	0	6	8	6	2	4	11	5	0	4	6	4	2	4	4	3	10	3	10	5	1	S.
22	6	6	6	3	6	1	6	3	7	6	5	8	5	0	6	8	6	2	4	11	5	0	4	6	4	3	4	4	3	10	3	10	5	2	S.W.
23	6	6	6	3	6	1	6	3	7	6	5	8	5	0	6	9	6	3	4	11	5	0	4	6	4	3	4	4	3	10	3	11	5	2	S.W.
24	6	6	6	3	6	2	6	3	7	6	5	8	5	0	6	9	6	3	4	11	5	0	4	6	4	4	4	5	3	10	3	11	5	3	W.
25	7	0	6	8	6	2	6	5	7	8	5	9	5	0	6	9	6	3	5	0	5	0	4	5	4	5	4	5	3	11	4	4	5	4	W.
26	8	0	7	0	6	3	6	6	7	7	5	11	5	0	6	9	6	3	5	0	5	0	4	5	4	5	4	5	3	11	4	4	5	4	N.
27	8	0	7	6	6	4	6	6	7	7	5	11	5	0	6	9	6	3	4	11	5	0	4	5	4	6	4	6	3	11	4	6	5	4	N.
28	8	0	7	9	6	4	6	4	7	11	5	11	5	0	6	9	6	3	5	3	5	0	4	5	4	6	4	6	3	11	4	5	5	5	N.
29	7	10	6	9	6	5	6	6	7	11	6	0	5	1	6	9	6	3	5	0	5	0	4	4	4	7	4	6	3	11	4	5	5	5	N.
30	7	9	6	6	6	5	6	6	7	9	6	0	5	0	6	9	6	3	5	0	5	0	4	4	4	7	4	6	3	11	4	4	5	6	N.
31	7	8	6	6	6	5	6	6	7	9	6	0	5	0	6	9	6	3	4	11	5	0	4	4	4	6	4	6	3	11	4	4	5	6	N.

II.

(1.) River Shannon Navigation.

Heights of Water on Lock Sills.

TABLE of the Heights of Water upon Lock Sills, from *Limerick* to *Lough Allen*—*continued.*

1832:	Park.		Annahbeg.		Errina.		Cussane.		Killaloe.		Hamilton.				Banagher.				Athlone.				Lanesborough, Lower Sill.		Cloondrah, Lower Sill.		Ruskey, Lower Sill.		Jamestown, Lower Sill.		Battle Bridge, Lower Sill.		Drumleague, Upper Sill.		Observations.
											Upper.		Lower.		Upper		Lower.		Upper.		Lower.														
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Wind
Sept. 1	7	8	6	6	6	5	6	6	7	9	5	10	5	1	6	6	6	3	4	11	5	0	4	4	4	5	4	6	3	11	4	3	5	7	
2	7	7	6	6	6	4	6	6	7	9	5	9	5	0	6	6	6	3	4	11	5	0	4	4	4	5	4	6	4	0	4	3	5	7	
3	7	6	6	3	6	4	6	6	7	9	5	9	5	0	6	6	6	3	4	11	5	0	4	4	4	5	4	6	4	0	4	2	5	7	
4	7	6	6	3	6	4	6	6	7	9	5	9	5	0	6	6	6	3	4	11	5	0	4	5	4	5	4	6	4	11	4	2	5	6	
5	7	5	6	3	6	4	6	5	7	9	5	8	5	0	6	6	6	3	4	11	5	0	4	5	4	6	4	5	4	1	4	1	5	6	
6	7	5	6	3	6	3	6	5	7	8	5	8	5	0	6	6	6	3	4	11	5	0	4	5	4	6	4	5	4	1	4	1	5	6	
7	7	4	6	3	6	3	6	5	7	8	5	8	5	1	6	4	5	10	5	0	5	0	4	5	4	6	4	5	4	2	4	1	5	6	
8	7	4	6	3	6	3	6	5	7	7	5	8	5	0	6	4	5	10	5	0	5	0	4	5	4	6	4	5	4	2	4	1	5	6	
9	7	3	6	3	6	2	6	4	7	7	5	7	5	0	6	4	5	10	5	0	5	0	4	5	4	6	4	5	4	2	4	1	5	6	
10	7	3	6	3	6	2	6	4	7	7	5	7	5	0	6	4	5	10	5	0	5	0	4	5	4	5	4	5	4	2	4	0	5	6	
11	7	2	6	3	6	2	6	4	7	7	5	6	5	0	6	4	5	10	5	0	5	0	4	5	4	5	4	4	4	2	3	11	5	6	
12	7	2	6	3	6	2	6	4	7	5	5	5	5	0	6	4	5	10	5	0	5	0	4	5	4	5	4	4	4	2	3	11	5	6	
13	7	1	6	3	6	2	6	4	7	6	5	5	5	0	6	4	5	10	5	0	5	0	4	5	4	5	4	4	4	2	3	11	5	6	
14	7	0	6	0	6	1	6	4	7	6	5	4	5	0	6	4	5	10	5	0	5	0	4	4	4	5	4	4	4	1	4	0	5	6	
15	6	10	6	0	6	1	6	4	7	6	5	4	4	10	6	4	5	10	5	0	5	0	4	4	4	5	4	4	4	0	4	1	5	6	
16	6	9	6	0	6	1	6	4	7	6	5	4	4	10	6	4	5	10	4	11	5	0	4	4	4	4	4	4	4	0	4	2	5	6	
17	6	8	6	0	6	1	6	4	7	6	5	4	4	9	6	4	5	10	4	9	4	11	4	4	4	4	4	4	4	0	4	1	5	6	
18	6	7	6	0	6	1	6	3	7	6	5	3	4	9	6	4	5	10	4	9	4	11	4	4	4	4	4	4	4	0	4	1	5	5	
19	6	6	6	0	6	0	6	3	7	6	5	3	4	9	6	4	5	10	4	9	4	11	4	4	4	4	4	4	4	0	4	1	5	5	
20	6	5	6	0	6	0	6	3	7	6	5	3	4	9	6	4	5	10	4	9	4	11	4	4	4	4	4	4	4	0	4	1	5	7	
21	6	4	6	0	6	0	6	3	7	6	5	3	4	9	6	4	5	10	4	9	4	11	4	4	4	3	4	4	4	0	4	1	5	7	
22	6	4	6	3	6	0	6	3	7	5	5	3	4	9	6	4	5	10	4	9	4	9	4	3	4	2	4	4	3	11	4	1	5	6	
23	6	3	6	3	6	0	6	3	7	5	5	3	4	9	6	4	5	10	4	9	4	9	4	3	4	2	4	3	3	11	4	1	5	5	
24	6	2	6	3	6	0	6	2	7	5	5	3	4	9	6	4	5	10	4	9	4	9	4	3	4	2	4	3	3	11	4	1	5	5	
25	6	2	6	3	6	0	6	2	7	5	5	3	4	8	6	4	5	10	4	9	4	9	4	3	4	2	4	3	3	11	3	11	5	5	
26	6	2	6	3	6	0	6	2	7	4	5	3	4	8	6	4	5	10	4	9	4	11	4	3	4	2	4	3	3	11	3	11	5	5	
27	6	1	6	3	6	0	6	2	7	4	5	3	4	8	6	4	5	10	4	9	4	11	4	3	4	2	4	3	3	11	3	10	5	5	
28	6	1	6	3	6	0	6	2	7	4	5	3	4	8	6	4	5	10	4	9	4	11	4	3	4	2	4	3	3	11	3	10	5	5	
29	6	0	6	3	6	0	6	2	7	4	5	3	4	8	6	4	5	10	4	9	4	11	4	3	4	3	4	3	3	11	3	10	5	4	
30	6	0	6	3	6	0	6	2	7	5	5	3	4	8	6	4	5	10	4	6	4	9	4	3	4	3	4	3	3	11	3	9	5	4	

(1.) River Shannon Navigation.

Heights of Water on Lock Sills.

TABLE of the Heights of Water upon Lock Sills, from *Limerick* to *Lough Allen*—*continued*.

1832.		Park.	Annahbeg.	Errina.	Cussane.	Killaloe.	Hamilton.		Banagher.		Athlone.		Lanesborough, Lower Sill.	Cloondrah, Lower Sill.	Ruskey. Lower Sill.	Jamestown, Lower Sill.	Battle Bridge, Lower Sill.	Drumleague, Upper Sill.	Observations
							Upper.	Lower.	Upper.	Lower.	Upper.	Lower.							
		Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Wind.
Oct.	1	6 0	6 0	0 0	6 1	7 4½	5 2½	4 8	6 4	5 10	4 6	4 9	4 3	4 3	4 3	3 11	3 9½	5 4	S.
	2	6 0	6 0	0 0	6 1	7 4	5 2½	4 7½	6 4	5 10	4 6	4 9	4 3	4 3	4 4	3 11	3 9½	5 4	S.W.
	3	6 1	6 0	0 0	6 1	7 2	5 2½	4 7½	6 4	5 10	4 6	4 9	4 4	4 3	4 4	3 11	3 11	5 4	S.W.
	4	6 2	6 0	0 0	6 0	7 2½	5 3¼	4 7½	6 4	5 10	4 6	4 9	4 4	4 3	4 4	4 0	4 3	5 4	N.W.
	5	6 3	5 6	6 0	5 11	7 4	5 3¼	4 7½	6 6	6 0	4 6	4 9	4 4	4 4	4 5	4 1	4 4½	5 6	S.W.
	6	6 4	5 6	6 0	5 11	7 3½	5 3¼	4 7½	6 8	6 2	4 6	4 9	4 4	4 4	4 5	4 1	4 4½	5 7½	S.W.
	7	6 5	5 6	6 0	6 0	7 3	5 3¼	4 8	6 8	6 2	4 6	4 9	4 4	4 5	4 8	4 1	4 6	5 7½	N.W.
	8	6 9	7 6	6 0	6 2	7 5	5 4½	4 8	6 10	6 4	4 6	4 9	4 4	4 6	4 8	3 8	4 6½	5 8	W.
	9	6 5	7 0	6 1	6 4	7 5	5 8	4 8½	6 11	6 5	4 9	4 11	4 4	4 6	4 8	4 0	4 7	5 8	W.
	10	6 6	7 3	6 2	6 5	7 6	- -	- -	7 0	6 6	4 9	4 11	4 4	4 7	4 10	4 1	4 9	5 10	W.
	11	6 11	6 6	6 4	6 5	7 6¼	- -	- -	- -	- -	4 9	4 11	4 4	4 6	4 0	4 2	5 1	5 11	W.
	12	8 0	8 0	6 6	6 6	7 10½	- -	- -	- -	- -	5 0	5 3	4 5	4 6	5 2	4 6	6 11	5 11	W.
	13	8 4	8 6	6 8	6 8	8 0½	- -	- -	- -	- -	5 3	5 9	4 5	4 7	5 6	4 8	6 8	6 3	W.S.W.
	14	7 9	7 7	6 8½	6 9	- -	- -	- -	- -	- -	5 3	6 9	4 6	6 2	5 10	4 11	6 7½	6 9	W.
	15	7 6	7 7	6 9	6 10	- -	- -	- -	- -	- -	5 3	7 0	4 6	6 5	6 2	5 3	6 7	7 0	W.
	16	7 8	7 9	6 11	7 1	- -	- -	- -	- -	- -	5 6	6 9	4 7	6 9	6 6	5 5	6 7	7 1	W.S.W.
	17	7 9	7 8	7 0	7 3	- -	- -	- -	- -	- -	5 6	6 6	4 7	6 9	6 6	5 6	6 7	7 0	S.W.
	18	7 11	7 9	7 0	7 4	- -	- -	- -	- -	- -	5 6	6 3	4 8	6 8	6 6	5 5	6 5½	6 11	W.S.W.
	19	8 0	7 9	7 2	7 5	- -	- -	- -	- -	- -	5 6	6 3	4 9	6 8	6 6	5 7	6 4½	6 10	S.S.W.
	20	8 0	7 9	7 4	7 5	- -	- -	- -	- -	- -	5 3	6 0	4 10	6 7	6 5	5 8	6 3	6 9	S.S.W.
	21	8 0	7 9	7 6	7 6	- -	- -	- -	- -	- -	5 3	6 0	4 11	6 7	6 4	5 8	6 2	6 8	S.S.W.
	22	7 11	7 9	7 6	7 6	- -	- -	- -	- -	- -	5 9	5 6	4 11	6 7	6 4	5 8	6 1½	6 7½	S.S.W.
	23	7 11	7 9	7 6	7 8	- -	- -	- -	- -	- -	5 9	5 6	5 0	6 6	6 3	5 7	6 1	6 7	S.S.E.
	24	7 11	7 7	7 5	7 9	- -	- -	- -	- -	- -	5 9	5 9	5 0	6 5	6 3	5 7	5 11	6 7	S.E.
	25	7 11	7 6	7 4	7 10	- -	6 5	6 4	- -	- -	5 9	5 9	5 1	6 4	6 6	5 7	5 11	6 7	S.E.
	26	8 0	7 9	7 3	7 11	- -	6 5	6 4½	7 9	7 3	5 9	5 9	5 2	6 3	6 4	5 7	6 3	6 8	S.E.
	27	8 1	7 9	7 2½	8 0	8 10	6 5	6 1½	7 9	7 3	5 9	5 9	5 2	8 9	6 3	5 7	6 3	6 8	S.E.
	28	8 2	7 9	7 1	8 1	8 10	6 5½	6 2	7 10	7 4	5 9	5 9	5 3	8 8	6 4	5 8	6 4½	6 9	S.E.
	29	8 3	7 10	7 1	8 2	8 10½	6 6	6 2	8 0	7 6	5 10	6 0	5 3	8 7	6 6	5 9	6 5	6 9	S.W.
	30	8 4	7 9	7 1	8 3	- -	6 7	6 2	8 2	7 8	6 0	6 1	5 4	8 8	6 7	5 10	6 5½	6 10	W.
	31	8 5	8 0	7 1	8 3	- -	6 8	6 4	8 4	7 10	6 0	6 3	5 4	8 10	6 7	5 11	6 6½	6 11	W.

(1.) River Shannon Navigation.

Heights of Water on Lock Sills.

TABLE of the Heights of Water upon Lock Sills, from *Limerick* to *Lough Allen*—*continued.*

1832:	Park.		Annahbeg.		Errina.		Cussane.		Killaloe.		Hamilton.				Banagher.				Athlone.				Lanesborough, Lower Sill.		Cloondrah.		Rooskey.		Jamestown, Lower Sill.		Battle Bridge, Lower Sill.		Drumleague, Upper Sill.		Observations.
											Upper.		Lower.		Upper.		Lower.		Upper.		Lower.				Lower Sill.		Lower Sill.								
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Wind.
Nov. 1	8	9	8	9	7	2	8	4	8	11	7	0	6	4	8	6	8	0	6	1	6	6	5	5	9	0	6	8	6	1	6	8½	6	11	W.
2	8	11	8	0	7	6	8	5	8	11½	7	1	-	-	8	8	8	2	6	1	6	9	5	6	9	0	6	8	6	1	6	10½	7	0	W.
3	9	6	9	6	7	11	8	6	9	3	7	5½	-	-	9	2	8	8	6	3	7	0	5	7	9	4	7	0	6	2	7	0	7	1	W.
4	9	0	8	6	7	11	8	6	9	6	7	8	-	-	9	4	8	10	6	6	7	3	5	8	9	6	7	2	6	4	7	3	7	4	W.
5	9	3	8	9	8	1	8	8	9	10½	7	9	-	-	9	6	9	0	6	6	0	0	5	9	9	10	7	6	6	5	7	7	7	8	N.
6	9	0	8	9	8	2	8	9	9	10½	7	9	-	-	9	6	9	0	6	9	7	6	5	9	9	10	7	6	6	7	7	6	7	9	N.
7	9	0	8	9	8	2	8	11	9	10½	7	8	-	-	9	6	9	0	6	9	7	6	5	10	9	10	7	6	6	8	7	5	7	10	N.
8	9	0	8	8	8	2	9	0	9	10½	7	7½	-	-	9	6	9	0	6	9	7	6	5	10	9	11	7	7	6	10	7	4	7	10	N.E.
9	9	0	8	9	8	2	9	2	9	11	7	7	-	-	9	8	9	2	6	9	7	6	5	11	9	11	7	7	6	11	7	3	7	10	N.E.
10	9	0	9	0	8	2	9	3	9	10	7	4½	-	-	9	8	9	2	6	9	7	6	5	11	9	11	7	7	7	0	7	5	7	9	S.E.
11	9	1	9	0	8	3	9	4	9	10½	7	6	-	-	9	8	9	2	7	0	7	9	6	0	9	11	7	7	7	1	7	9	7	9	W.
12	9	1	9	0	8	4	9	7	10	0	7	7½	-	-	9	9	9	3	7	3	7	6	6	0	9	10	7	6	7	2	7	8½	7	8	W.
13	9	1	9	0	8	5	9	8	10	0½	7	8½	-	-	9	9	9	3	7	3	7	6	6	2	9	10	7	6	7	3	7	8	7	6	W.
14	9	0	9	0	8	6	9	10	10	1½	7	9½	-	-	9	9	9	3	7	0	7	9	6	4	9	10	7	6	7	4	7	7	7	10	W.
15	9	0	9	0	8	7	9	11	10	1½	7	10½	-	-	9	10	9	4	7	6	8	0	6	6	9	10	7	5	7	3	7	6	7	3	
16	9	0	9	0	8	8	10	0	10	2	7	10	-	-	9	10	9	4	7	6	8	0	6	8	9	10	7	5	7	2	7	5½	7	2	S.E.
17	9	0	9	0	8	8	10	3	10	2½	7	9	-	-	9	10	9	4	7	6	8	0	6	10	9	10	7	5	7	1	7	5	7	2	S.E.
18	9	0	9	0	8	9	10	5	10	2½	7	8½	-	-	9	10	9	4	7	6	8	0	7	0	9	10	7	6	7	1	7	4	7	1	S.W.
19	9	3	9	6	8	9	10	6	10	3	7	8½	-	-	9	10	9	4	7	8	8	3	7	1	9	10	7	7	7	1	7	3½	7	1	S.W.
20	10	6	10	0	8	10	10	9	10	6	8	1	-	-	10	0	9	6	7	8	8	3	7	2	9	11	8	0	7	2	7	9	7	3	S.W.
21	10	6	9	9	8	11	10	11	10	6½	8	4	-	-	10	0	9	6	7	9	8	7	7	3	9	11	8	2	7	3	7	9	7	4	S.
22	10	6	10	9	9	2	11	0	10	9	8	6	-	-	10	0	9	6	8	0	8	9	7	3	10	0	8	6	7	4	7	10	7	6	S.E.
23	10	8	10	3	9	3	11	2	10	11½	8	7	-	-	10	0	9	6	8	0	8	9	7	5	10	4	8	5	7	4	7	11	7	6	S.E.
24	10	7	10	3	9	5	11	3	11	1	8	6½	8	9	10	2	9	8	8	3	9	0	7	7	10	6	8	4	7	4	7	10	7	5	S.E.
25	10	6	10	3	9	7	11	6	11	2	8	6	8	10	10	2	9	8	8	3	9	0	7	9	10	7	8	6	7	4	7	9½	7	5	N.W.
26	11	1	11	3	9	9	11	7	11	3	8	6	9	0	10	2	9	8	8	5	9	0	7	10	10	8	8	7	7	5	7	11	7	6	S.W.
27	11	4	11	3	9	9½	11	7	11	5	8	6½	9	0	10	0	9	6	8	5	9	3	8	0	10	10	8	8	7	5	7	11½	7	8	S.W.
28	11	8	12	6	9	10	11	5	11	6	8	6½	9	0½	10	0	9	6	8	5	9	3	8	2	10	10	8	8	7	6	8	1	7	9	S.W.
29	12	0	12	6	10	0	11	2	11	3	9	0½	9	8	9	11	9	5	8	6	9	3	8	4	10	9	8	10	7	7	8	3½	7	10	S.W.
30	12	1	12	6	10	6	11	6	12	0	9	0½	10	9	9	10	9	4	8	6	9	3	8	5	10	9	8	10	7	8	8	2½	7	11	S.W.

(No. 2.)—REPORT on the State of the River Shannon and Canal Navigation, from *Portumna* to *Athlone*, or South End of *Lough Ree*, so far as relates to that portion of the Navigation transferred, by Agreement, from the Directors-general of Inland Navigation to the Grand Canal Company, in the Year 1806.

II.
(2.) Navigation from Portumna to Athlone.

For the purpose of elucidating the state of this part of the Shannon Navigation, the accompanying Maps and Longitudinal Section of the river, together with the various detailed Drawings connected with the general survey of the Shannon, are applicable, the first exhibiting the sailing course, and the depth of water reduced to the lowest state, or summer water, 1832. On the Section is described the highest and lowest state of the water, viz. December 1831 and August 1832; also the levels of the various lock-sills. On the detailed Drawings the various shoals are represented, with the depth of water on each, taken at a number of places, reduced to low summer water; and sections of the cuts, canals, &c.

I commenced with my examination at Portumna, and immediately opposite Derry Island (the southern boundary of the Grand Canal Company) found, by numerous soundings in various directions, a considerable shoal formed across the channel, the shallowest part being seven feet deep and somewhat above the level of the upper sill of Killaloe Lock, the lower sill of Hamilton's Lock having but four feet nine inches depth of water. The water upon this shoal is much too shallow for this exposed situation, as in stormy weather and the wind west, which causes much swell, a vessel with a very light draft of water is almost sure to strike and ground on the bar. I was informed by the master of the steam-packet which plies between Killaloe and Portumna, the vessel drawing five feet six inches water, that he is frequently obliged, when the water is low and in stormy weather, to lie outside the bar and land the passengers and luggage by means of the small boat.

This shoal consists of large stones and shingly gravel, which renders the passage very dangerous to vessels entering the river, and requires deepening, so as to afford sufficient space for the channel in breadth, and marking out by two substantial stone beacons; at present there is only one pile on the east side, of cast iron, of about eight inches diameter; it is driven so low that in times of high floods the top is scarcely perceptible, and at this particular time it may be considered useless.

The entrances to the two harbours at Portumna require considerable deepening, the one on the Connaught side two feet three inches, and that on the Munster side requires one foot three inches average deepening over the general surface.

From this part to Hamilton's Lock, a distance of nine miles, the river appears sufficiently deep, excepting at White's Ford, where the sides of the channel require a little deepening, and on the east side of Long Island several stones and detached pieces of rock are elevated above the bed of the river, with only three feet six inches water upon them; these require to be removed, or to construct a beacon on them, to render the navigation safe.

From Derry Island to Hamilton's Lock beacons are very much wanted, to mark out the river course in winter, there being only one in this distance, which is of stone, at the mouth of the Lower Brusna river, and this is in a falling state, apparently from being insufficiently built.

There are three or four small stakes, of about six inches diameter, at the sharp bends and most exposed parts, which I was informed were put up by the Inland Steam Navigation Company. Small trees and hawthorn bushes are now planting on one side of the river to show its boundary, and may do very well in a few years, when grown to a tolerable size; but this appears doubtful, as the cattle rub against and destroy them, and mischievous persons cut and break them down, and therefore they may be considered insufficient and

(2.) Navigation from Portumna to Athlone.

improper marks; and it would appear by the agreement that the Grand Canal Company are bound to "*erect and set up, in a firm, permanent and substantial manner*, 110 *good and substantial beacons at least, through the whole extent of the navigation*:" a portion of which number requires to be erected in this distance, and stone or iron is the most applicable for this purpose.

Cloonaheenogue Canal.

This canal enters at the mouth of the Lower Brusna river, and at about 280 yards from this point is Hamilton's Lock; in this distance it requires deepening and increasing in breadth nearly all the way along, (as compared with the lower sill of lock); there are many large stones and detached pieces of rock in the bottom and sides, which render it dangerous to vessels navigating, and require to be cleared away. The soundings were taken along the centre part of the canal, which will be seen by the Table, and what is under six feet six inches requires deepening to this dimension, and the transverse section increasing to 24 feet at bottom, with side slopes 1½ horizontal to 1 perpendicular, for by the washing in of the sides it has decreased the depth. The top banks require raising above the winter floods, and terminating by pierheads of stone next the river; the steps near the lock-house require building up in a substantial manner, having been washed into the canal by the side banks giving way.

Soundings from the Lower Gate Sill to the Entrance of the River *Brusna*.

	Depth.	Required Deepening.	Depth.	Required Deepening.	Depth.	Required Deepening.	Depth.	Required Deepening.
	Ft. In.		Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.	Ft. In.
Lower Sill	4 9		4 2	1 1	4 6	0 9	4 6	0 9
	0 6		4 4	0 11	4 6	0 9	4 6	0 9
	5 3	Required depth according to the present Sill.	4 1	1 2	4 3	1 0	5 3	—
			4 1	1 2	4 4	0 11	5 4	—
			4 2	1 1	4 2	1 1	5 2	0 1
	4 5	0 10	4 5	0 10	4 3	1 0	5 4	—
	4 6	0 9	4 3	1 0	4 5	0 10	5 2	0 1
	4 2	1 1	4 4	0 11	4 4	0 11		
	4 3	1 0	4 5	0 10	4 9	0 6	33)	25 10
	4 2	1 1	4 5	0 10				
	4 2	1 1	4 6	0 9			Average Deepening required	0 9

The foregoing Table shows the average depth of excavation to be nine inches according to the present sill; and the sides being washed in and otherwise contracted, one foot three inches may safely be taken for the average deepening required, rather underrating it. Hence,

840 feet × 30 feet × 1 foot 3 inches = 1,166 cube yards.

By reducing the sills to the proper level to afford six feet water on them, one foot three inches in addition will be required, and the quantity of the excavation would be 3,887 cube yards.

Hamilton's Lock.

This lock was rebuilt in the year 1806. The masonry appears sound and substantial, with the exception of a little pointing being required in the joints of chamber walls, coping, &c. Some part of the wing walls require to be rebuilt and coping to the same.

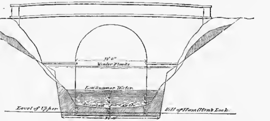
Water

II.

(2.) Navigation from Portumna to Athlone.

	Ft.	In.		Ft.	In.	
Water on lower sill - -	4	9	which is	1	3	too high.
Ditto - upper sill - -	5	6	ditto	0	6	ditto.
Length of lock - - -	83	6				

These gates were erected at the same time the lock was built, (26 years ago,) and the whole is now in a very dilapidated state. The lock-keeper states, that "*nothing has been done to them, or a penny laid out, since they were first put up, except a few patchings of plank, or a new swing bar*;" and it certainly appears high time they were replaced by new ones, including sluices, machinery, swing bars, &c. The sills are also much out of order and should be examined, and as they are constructed too high to afford six feet depth at the lowest summer water, this adjustment might be performed at the same time; and I was informed by the lock-keeper and master of the steam-vessel, that they have frequently known the water to be only four feet six inches, and in the upper reach above the lock, under the accommodation bridges, in consequence of building inverted arches for supporting the superstructure being too high, *i. e.* above the level of the lock-sills, the latter person has been frequently obliged to empty the steam-boilers of water, to cause his vessel to float at three feet six inches mark. Not having the command of water in dry seasons, for want of proper weirs for its due regulation, it renders the navigation less available, and as the trade on the Shannon appears considerably on the increase, every facility and accommodation should be afforded to make it perfect, as it plainly appears, from the above observations on the inefficient state of this canal, that its construction was not executed according to the specification, "*that there shall be at all seasons of the year six feet six inches of water in all parts of the said navigation, save and except over the sills of locks and stop-gates, and there shall be at all seasons of the year six feet depth of water on all sills of locks and stop-gates.*" Thus it appears that all the inverted arches require to be taken up, and re-constructed to the proper level.



First accommodation bridge will require one foot seven inches deepening at the centre, and two feet two inches at the sides.

Second accommodation bridge will require eight inches deepening at the centre, and one foot eleven inches at the sides.

Third accommodation bridge is sufficiently deep at the centre of inverted arch, but the sides require 11 inches deepening.

All the bridges require pointing, parapets and coping repairing, as do the retaining walls to slopes of banks. Excepting the inverted arches, the dimensions appear according to the specification; but for the purposes of steam navigation, the present arches, 18 feet wide, would be much better to be taken down and increased at the abutments to 24 feet, and swivel bridges erected in their stead, as much loss of time and inconvenience is experienced from being obliged to lower the masts and chimnies, besides the injuries sustained by the boats.

(2.) Navigation from Portumna to Athlone.

SOUNDINGS taken along the *Cloonaheenogue* Canal, above Lock, to the Entrance of the River, taken at every 50-feet distance.

Distance in Feet.	Depth.	Required Deepening.	Distance in Feet.	Depth.	Required Deepening.	Distance in Feet.	Depth.	Required Deepening.	Distance in Feet.	Depth.	Required Deepening.
Upper Sill at Hamilton's Lock.											
	Ft. In.	Ft. In.		Ft. In.	Ft. In.		Ft In.	Ft. In		Ft. In.	Ft. In.
	5 6	—	2,000	5 7	0 5		5 7	0 5		5 9	0 3
Required bottom according to the present Sill	0 6	—		6 1	—		5 3	0 9	6,500	5 7	0 5
	6 0	—		5 10	0 2		5 11	0 1		5 11	0 1
	6 4	—		5 10	0 2		5 0	1 0		5 5	0 7
	6 7	—		5 10	0 2		5 0	1 0		5 7	0 5
	5 4	0 8		6 1	—	4,500	5 4	0 8		5 9	0 3
	5 7	0 5		6 1	—		5 3	0 9		5 7	0 5
	5 7	0 5		5 5	0 7		5 0	1 0		5 5	0 7
	4 10	1 2		5 5	0 7		4 11	1 1		5 1	0 11
	5 7	0 5		5 11	0 1		4 10	1 2		5 6	0 6
	5 4	0 8	2,500	6 1	—		5 3	0 9		5 5	0 7
Feet.	5 7	0 5		6 1	—		5 4	0 8	7,000	5 10	0 2
500	5 10	0 2		6 1	—		4 11	1 1		5 9	0 3
	5 10	0 2		6 1	—		5 0	1 0		5 9	0 3
	6 4	—		5 7	0 5		5 1	0 11		5 7	0 5
	6 1	—		5 9	0 3	5,000	5 1	0 11		5 9	0 3
	5 10	0 2		5 10	0 2		5 0	1 0		5 5	0 7
	5 7	0 5		5 7	0 5		4 11	1 1		5 5	0 7
	5 4	0 8		5 9	0 3		5 3	0 9		5 9	0 3
	6 1	—		5 9	0 3		5 3	0 9		5 10	0 2
	6 1	—	3,000	5 9	0 3	Accommodation Bridge.	4 10	1 2		5 10	0 2
	5 7	0 5		5 4	0 8		5 4	0 8	7,500	5 10	0 2
1,000	6 1	—		5 7	0 5		5 6	0 6		5 10	0 2
	5 7	0 5		5 10	0 2		5 5	0 7		5 10	0 2
	5 7	0 5		5 11	0 1		4 3	1 9		5 7	0 5
	5 5	0 7		5 5	0 7		4 11	1 1		5 5	0 7
	5 4	0 8		5 4	0 8	5,500	5 3	0 9		5 7	0 5
	5 5	0 7		5 11	0 1		5 5	0 7		5 7	0 5
	5 5	0 7		5 11	0 1		5 5	0 7		5 5	0 7
	5 5	0 7		6 0	—		5 5	0 7		5 4	0 8
	5 4	0 8	3,500	5 11	0 1		5 9	0 3		5 8	0 4
	5 7	0 5		5 10	0 2		5 9	0 3	8,000	6 1	—
1,500	5 7	0 5		5 10	0 2		5 10	0 2	Accommodation Bridge.	6 1	—
	5 7	0 5		5 5	0 7		5 9	0 3		5 7	0 5
	5 7	0 5		5 7	0 5		5 8	0 4		5 11	0 1
	5 4	0 8		5 5	0 7		5 7	0 5		5 10	0 2
	5 7	0 5		5 6	0 6	6,000	5 8	0 4		6 4	—
	5 4	0 8		5 9	0 3		5 9	0 3		5 10	0 2
	5 10	0 2		5 7	0 5		5 11	0 1		5 9	0 3
	5 4	0 8		5 1	0 11		5 9	0 3		6 4	—
	5 4	0 8	4,000	5 5	0 7		6 0	—	8,900	5 10	0 2
Accommodation Bridge.	5 4	0 8		5 1	0 11		5 5	0 7		170)	73 7
	4 5	0 7		5 7	0 5		5 6	0 6		Average	0 5
				5 10	0 2		5 9	0 3			
				5 10	0 2		5 7	0 5			

The foregoing Table shows the deepening required at the centre part to average five inches, allowing the sills at the present height, and seven inches may fairly be allowed for the washing in of the banks, and filling the angles of the side slopes, making the average 12 inches; hence,

8,900 feet × 30 feet × 1 foot = 9,888 cube yards.

By adjusting and lowering the sills to their proper level, to afford six feet water over them in the driest seasons, and enlarging the canal to the defined scale, it will require 30,635 cube yards of excavation.

The first of these quantities requires to be excavated, to keep the upper sills in their present level, and the latter quantity to sink them to the defined gauge; therefore to remedy this inconvenience, would be to construct a weir at Kil-

logue

(2.) Navigation from Portumna to Athlone.

logue and enlarge the channel, for the purpose of regulating the height of the water, and retain it at or near the summer level.

The towing-path also requires forming and levelling, and the side drains opening, and the weeds and grass clearing out the whole length of the canal on both sides.

At the distance of about half the length of the canal there is a very considerable leak in the west side bank, which requires stopping. The north entrance of the canal from a branch of the Shannon, near Shannon Grove, is by a small gut turning out of the river, nearly at a right angle, and continues for about 100 feet very crooked, and which renders it very inconvenient and difficult for boats navigating it, (*see* Map and detailed Drawing,) particularly when the water is high, as there is no beacon or mark to distinguish the passage; it is otherwise dangerous, by the roots and stumps of trees projecting out from the sides of the banks, and (I was informed) was the cause of sinking a vessel and damaging her cargo. These two projecting points, forming the crooked part, require to be taken off. By excavating about 3,000 yards of earth, a good entrance may be made, which would amply repay this outlay by improving the line of navigation.

At Counsellor's Ford the navigable channel is very narrow and winding and intricate, the bed of the river uneven, and at many of these parts requires deepening about 12 inches; the sides also are very irregular, and require forming into a wider and better channel, and the site of the old eel-weirs should be deepened, to allow the winter floods to escape freely, which would reduce the head of water of several inches, formed during the winter floods, and would very much improve the navigation at this part. The shoal consists of gravel and clay, and presents no difficulty in the excavation.

From this part to Banagher Lock the water is sufficiently deep to follow the main channel; an improvement might be made about half-way, by taking off a point of gravel on the east side, which lies about two feet under summer water, and as it forms only a narrow ridge, it might be reduced to the required depth at a small expense, thus rendering the navigation much safer.

There are only two beacons (which are built of stone) from Cloonaheenogue Canal to Banagher, one of which is partly destroyed; small trees have been planted this year (1832) for marking out the channel, but I consider them very inefficient marks, and it is very difficult to distinguish them from others that are growing out of the line.

Banagher.

No. 20.

ENTERING Banagher Canal some little deepening is required, (*see* Table of Soundings) having only five feet seven inches and six feet one inch; the first requiring 11 inches and the last five inches to the specified depth.

Banagher Lock is 81 feet 6 inches in length, and 16 feet 5 inches in breadth in the clear, and the rise on the sills one foot three inches; depth of water on lower sill six feet three inches, and upper six feet nine inches. The head of water is in summer one foot nine inches, and in winter two feet two inches.

This lock is built of good squared masonry; the joints of the chamber and recesses require pointing, and the coping taking off and resetting with a good bed of mortar and the joints dowelling, as they are displaced and out of a line. The wing walls require repairing, considerable portions of them having fallen into the canal.

The lock gates were put up in the year 1806, and I found them very dilapidated, so much so, that in lifting one of the pairs out to be repaired, they fell to pieces. This pair of gates was replaced last April, and the other repaired with new plank, &c., and are now in a good condition.

The canal above the lock, particularly towards the wharf and bridge, is very much filled up with gravel and other matter washed from the sides of the banks, and at these places very contracted in width.

The following Table shows the soundings, and the required quantity to be excavated to make it to the specified size.

(2.) Navigation from Portumna to Athlone.

Soundings in the Canal at *Banagher* (taken every 50 feet).

—	Depth.	Required Deepening	—	Depth.	Required Deepening.	—	Depth.	Required Deepening.	—	Depth.	Required Deepening
	Ft. In.	Ft. In.		Ft. In.	Ft. In.		Ft In.	Ft. In.		Ft. In.	Ft. In.
Upper Sill at Banagher Lock	6 9	—		6 6	—		6 3	0 3		5 6	1 0
				6 6	—		6 2	0 4		5 2	1 4
	6 9	—		6 4	—		6 0	0 6		5 0	1 6
	6 3	0 3		6 6	—		6 0	0 6		5 6	1 0
	6 3	0 3		6 6	0 2		6 0	0 6		5 0	1 6
	6 6	—		6 6	—		5 3	1 3		5 3	1 3
	6 6	—		6 6	—		5 0	1 6		5 9	0 9
	6 6	—		6 6	—		5 0	1 6		5 9	0 9
	6 6	—		6 6	—		5 0	1 6		5 9	0 9
	6 6	—		6 6	—		5 3	1 3		5 9	0 9
	6 6	—		6 3	0 3		5 3	1 3		5 6	1 0
										42)	22 10
										Average	0 11

By the foregoing Table it appears that 11 inches average deepening is required throughout the bottom and sides; hence

2/ 1,749 feet × 25 feet × 11 inches = 1,447 cube yards,
1,749 - × 20 - × 11 - = 2,375 —
3,822 —

The Swivel Bridge, leading from the line of the Old Bridge, is chiefly of timber. Its construction is far too slight for a public thoroughfare for the provinces of Leinster and Connaught, and I do not consider it safe for heavy carriages, pieces of artillery, &c. &c.; one of the longitudinal beams is broken, and the machinery for opening and shutting appear not well adapted for this purpose.

The harbour at this part requires deepening and the wharf wall repairing, the whole of the coping taking off and resetting and the joints dowelled, to keep the face even. A few mooring-posts are also required, to be fixed at convenient distances apart, to secure the vessels to; also the wharf gravelled, and formed to a level surface with the coping. The Lockhouse requires a general repair throughout.

Turning out of the canal at the two stone beacons towards Shannon Harbour, the course taken for the navigable channel is very circuitous and rather shallow, the bed of the river is uneven, and at many parts requires deepening, in the performance of which it would be an improvement to keep in a more direct course.

From this part to Leahinch Island the river is a very wide and capacious channel, one or two places excepted, which are trifling in extent, (*see* Table of Soundings,) but which require attention and the erection of proper beacons.

Leahinch.

No. 21.

On the east side of the island at Leahinch the navigable channel is interrupted by an eel-weir, formed of hurdle-work, stakes, &c., which blocks up three-fourths of the river course. The navigable passage is on the west side, which is very narrow, crooked and shallow, and only four feet water in the deepest part, and this exceedingly narrow; in summer laden vessels cannot navigate through it. This shoal is of very small extent, consisting of gravel and clay, and requires two feet six inches deepening, and a channel forming of sufficient capacity, in a more direct line, parallel to the sides of the bank, and proper beacons erected to mark out the passage, there not being any at present. From Leahinch to Derryholmes, a distance of about two miles and a half, the river is broad and capacious.

Derryholmes.

No. 22. At Derryholmes a shoal of gravel and stones of considerable extent intercepts the navigation, and the river course is uniformly so shallow, narrow and crooked, that it is very difficult to navigate or get a vessel through; its formation may be considered one of the worst description. Five beacons have been erecting, but the passage being so difficult, and the current at times running so strong, that two of them have been destroyed by vessels running foul of them, and the stones and other material which formed them are lying in the channel. By an inspection of the Table of Soundings, &c. it will be seen that only three feet water was found in several parts. A regular and more direct channel requires forming at this part, its section not to be of less dimensions than specified for the canal part, depth of bottom six feet six inches from low summer water, and the passage marked out by four substantial stone beacons. From Derryholmes to Bishop's Island the river is of considerable breadth and depth, sufficient for the navigation.

Bishop's Islands.

No. 23. At Bishop's Islands a cut is formed to the west of the main channel for the navigable communication, and near the entrance to it there is only four feet water. The cut is 57 feet broad, and in depth, at the shallowest part, six feet; but in consequence of the main channel being choked up with eel-weirs, a head of several inches is formed, and the greatest body of water flows down this cut, with a velocity of two feet ten inches per second, which makes it very inconvenient and expensive, having at times to employ extra force to get a vessel up through the cut. This cut requires a little deepening, and the main channel clearing of the eel-weirs, to reduce the head of water, which might be performed at a small expense, and the line of navigation would be more perfect if taken in this latter direction; four beacons are also required at this part.

Garrymore.

No. 24. From this part to Garrymore the river course is fine, wide and deep, when another shoal presents itself, and the water is uniformly shallow. The channel which has been formed for the navigation runs in oblique and circuitous direction across the river course, and the shallowest depth of water in the centre of this channel was found four feet two inches, and being otherwise contracted by large stones and gravel, a vessel with even a moderate draught cannot pass. Two stone beacons were erected to mark out this imperfect track, but being so badly formed, the lower one has been destroyed by the vessels running against it, and the fragments are lying directly in the channel. A great portion of this shoal is grown over with rushes, and which impede the current very much. A more perfect and direct channel requires forming at this part, of sufficient capacity, and a depth not less than six feet six inches, marked out by four proper and substantial beacons.

From Garrymore to near Shannon Bridge the river is sufficiently capacious; a little below the bridge a short cut has been formed, to avoid the long sweep of the river; this cut at the shallowest part has only five feet depth of water, and every other way of its section much contracted, which requires deepening to six feet six inches, and enlarging to the specified section, 24 feet at bottom and 44 feet surface water (summer).

Shannon Bridge.

No. 25. The canal and harbour below the bridge are very shallow, (*see* Table of Soundings,) its average depth being about four feet eight inches to five feet, and the deepening required is about one foot six inches; hence,

408 feet × 60 feet × 1 foot 6 inches = 1,360 cube yards.

The lock is built of rubble masonry, ashler quoins and coping, and appears substantial and well built, and only requires the joints pointing, and some other light repairs with the harbour walls, coping of bridges, &c.

Length of lock is -	80 feet 6 inches	rise 7 inches.
Breadth - - -	18 - 6 -	
Water on upper sill -	5 - 4 -	
Ditto - lower - -	5 - 5 -	

371. These

(2.) Navigation from Portumna to Athlone.

These gates are in a very bad and neglected state, and appear to have had little if anything done to them since they were put up, in the year 1806. The frames and sheeting plank are much decayed and out of order, racks and sluices the same, and require a general repair, or rather a new set of gates.

It will also be seen, by the depth of water on the sills, that they have been constructed much too high, and when the capacity of the channel at Derryholmes, Bishop's Island and Garrymore is made according to the specified section, it will reduce the water nearer to a level, as it will be requisite to make the lower sill about 12 inches deeper than at present, and the upper one eight inches.

From the upper gates of the lock to the river the canal bottom requires deepening on an average of 2 feet; hence,

300 feet × 40 feet × 2 feet = 888 cube yards.

Clirhaun.

The next part requiring improvement is at Clirhaun, where there is a large stone or detached piece of rock on the west side of channel near the bank; this should be removed by blasting, there being only nine inches water upon it, making it very dangerous; and there are three small shoals in the centre of the channel, having only three feet six inches water upon them; these should either be reduced to the proper depth or beaconed so as to point them out, as they are very dangerous to vessels navigating: there are also a number of large stones on the east side of the river which require removing from the channel.

Ballynatave.

No. 26. At Ballynatave the navigation is continued along the west branch of the river; this channel, however, is too shallow at low water in various parts, having in some places only five feet three inches water; these parts therefore require 15 inches deepening and enlarging in width to form a proper channel. There is a considerable current in this branch, which is caused by the formation of eel-weirs in the main channel of the river, and their removal would no doubt reduce it to a tranquil state, and if the shoal also was reduced so as to form a navigable channel, it would be found preferable to the present line, by the east branch being a fine spacious channel, as may be seen by the Map. Substantial beacons would be required to mark out the channel.

At the upper end of the west branch, turning into the main river, there is a sharp inconvenient turn, which requires adjustment, to make the line more direct; this has been partly effected, but requires completion. From this part to Tullymore Ford the river is wide and capacious.

Tullymore.

No. 27. At Tullymore Ford a shoal of considerable extent occurs, quite occupying the width of the river, which is very great; a channel has been formed to navigate this shoal nearly in the middle, but this channel is of very contracted dimensions, both in breadth and depth, having in some parts no more than four feet six inches water, and the breadth not sufficient; to add to the inconvenience, but one iron pile exists to mark its course, and from its almost central situation in the river, it is difficult to know on which side the channel lies; and from the great expanse of the river at this part, the winds have a very powerful effect, and add much to the difficulties of the passage by the great swell.

To remedy this, a capacious channel requires forming, larger than at any other part previously mentioned, from its exposed situation, having six feet six inches water at the lowest state of summer water; this should be marked out by at least four substantial stone beacons, two at each end of the channel. From Tullymore Ford the river again becomes deep, and continues so to Calf Island.

Calf Island.

At this island the course usually navigated is the west branch; this is narrow, and at the upper and lower ends partially shallow, and requires deepening and enlarging in the width of the channel, and the course to be marked out by substantial beacons. There seems little reason why the west branch should be exclusively used, as the east or main branch is open and capacious.

From Calf Island to Long Island the river is again broad and deep.

(2.) Navigation from Portumna to Athlone.

Long Island.

At Long Island the west branch is the course navigated; this is a narrow branch, though sufficiently broad for the navigation, but it is shallow in many parts, particularly at the upper and lower ends, where, as will be seen by the Table of Soundings, there is in some places only four feet six inches water, and in others only three feet three inches; these parts require deepening, so as to give six feet six inches water at low summer level, and proper beacons are required to point out the channel. The east branch is the main line of the river, and is much preferable as to its dimensions, having very deep water; but from its being a somewhat longer course (about a quarter of a mile), it appears to have been abandoned, and the shorter or shallower course adopted. The river from this to Rann Island is wide and capacious.

Rann Island.

No. 28.

At this place the course is on the east side of the island, and is of sufficient depth at all times, excepting a small part at the upper end, where there is only five feet six inches water; this requires deepening 12 inches. The most direct course is on the west side, but this is interrupted by a few large stones and gravel, and it would be advisable to remove them and form a channel sufficiently capacious, as it would enable the vessels to be tracked along the west bank; at present it is frequently difficult, from the prevalence of the westerly winds, to get vessels along the east side of the island. From this place the river is fine, wide and capacious, and sufficiently deep, until entering the canal, a little to the south-west of the town of Athlone. This canal is 1½ miles in length, and enters the river again at the north end of the town, near to Lough Ree; there is one lock and three bridges.

Athlone.

No. 29.

From the river at the lower end of the canal to the lock, a distance of 2,706 feet, the canal is in a bad state. The banks have slipped in and considerably contracted the dimensions of the channel. The side slopes require making-up and forming, and the paths to be levelled; the back drains require to be cleansed, the weeds cut and the channel deepened, to allow the land water to escape; for want of this, the banks have been both cut through near the lock to lead the drainage of the land into the canal; this also acts as a fence to keep persons off the banks, as they are let for cattle grazing; this appears improper, as cattle destroy the banks by treading them into the canal.

Soundings were taken of this part at every chain in length, as represented upon the Plan and Section, and considerable deepening and enlarging is required throughout, as will appear by the following Table:—

Table of Soundings from the River to the Lock.

Distance.	Depth.		Required Deepening.		Distance.	Depth.		Required Deepening		Distance.	Depth.		Required Deepening.		Distance.	Depth.		Required Deepening.	
	Ft.	In.	Ft.	In.		Ft.	In.	Ft.	In.		Ft.	In.	Ft.	In.		Ft.	In.	Ft.	In.
	4	3	2	3		4	3	2	3		3	9	2	9		5	0	1	6
	4	6	2	0		4	6	2	0		3	9	2	9		5	3	1	3
	4	9	1	9		4	3	2	3		3	9	2	9		5	0	1	6
	4	6	2	0		4	6	2	0		4	0	2	6		5	3	1	3
	4	6	2	0		4	3	2	3		4	0	2	6		5	3	1	3
	4	6	2	0		4	3	2	3		3	9	2	9		5	9	1	9
	4	6	2	0		4	6	2	0		5	3	1	3		5	3	1	3
	4	6	2	0		4	0	2	6		5	6	1	0	40	4	9	1	9
	4	0	2	6		3	9	2	9	30	5	0	1	6					
	4	3	2	3	20	3	6	3	0		5	0	1	6	Lower Sill	5	0		
10 chains	4	6	2	0		3	6	3	0		5	0	1	6			41)	82	3
																Average		2	0

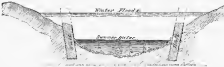
The foregoing Table shows the required deepening at the centre part to average two feet, and six inches may be added for the slipping in of the banks, and filling up the angles at the foot of the side slopes; hence,

2,706 feet × 30 feet × 2 feet 6 inches = 7,516 cube yards.

The

(2.) Navigation from Portumna to Athlone.

The lock was built in the year 1806. Its length is 80 feet and breadth 16 feet three inches; the rise is four feet; depth of water on lower sill five feet; depth of water on upper sill five feet; this has been known as low as four feet nine inches. Thus it appears that each of these sills is one foot too high. The lock is built of good squared masonry; the joints of chamber and wing walls, coping, &c., require pointing. Under the surface of the water the mortar has grown out of the joints and forms stalactites, in some places projecting five or six inches, rendering the chases of the stop-gates useless; these protuberances require to be chisselled off. These gates are in a bad state, and were erected when the lock was built. The swing-bars, racks and sluices are all in a bad state, the T and L plates want securing, and new head and mitre pieces supplied; they are still very dilapidated, and require a thorough repair. The accommodation bridge across the tail of lock is in a dangerous and ruinous state. The approaches are of masonry, but having settled considerably, a large crack appears at each of the four angles; these require making good and pointing and part of the walls rebuilding, and the coping, part of which is now lying in the lock, requires to be made good. The centre part of the bridge crossing the lock is of timber; it is in a ruinous state; the main beams and the planking forming the roadway are much decayed, the side rails are broken and carried away, and it is highly dangerous to foot-passengers and cattle crossing.



From the lock to the second bridge leading to the fortifications the canal is in a disgracefully neglected state, appearing as if it belonged to no one, the sides having slipped from time to time, occasioned by persons drawing water, unloading turf-boats, washing clothes, &c.; this should not be allowed, but proper steps should be erected at two or three places to the water's edge, for the accommodation of the inhabitants. The depth of water at this part is only four feet (*see* Sketch) in the centre, and this requires two feet six inches deepening; and at the distance of half-way between the centre and the sides of the canal three feet water only was found; this requires deepening three feet six inches; and at a part a little further on, where walls have been built to retain the banks, the width of the channel being 24 feet, four feet of the top part of these walls, with the backing on each side, have been thrown down the whole of the length, and the matter is lodged in the canal (*see* Sketch) at the angle, near the base of the walls, so that a vessel of even a light draught cannot in summer time enter the canal; thus it is rendered almost useless for any craft larger than turf-boats.

At the second bridge the parapets and retaining walls on each side are in a bad state, and for the purpose of obtaining gravel and sand, the upper slopes have been excavated in several parts by unauthorized persons, and the parapet walls undermined, and in one or two places a considerable part is thrown down.

Between the second and third bridges the sections of the canal are much the same as before stated, being of somewhat greater capacity; the laybye or turning place at the upper end requires deepening and the rushes and grass cutting; the whole length of the canal is grown over with weeds, which require to be all cleared away. The harbour or quay requires deepening (particularly at each end) the whole length, the walls to be pointed and the coping reset and dowelled, and a few mooring-posts to be placed at convenient points, for the securing of craft alongside; the quay also requires to be formed and levelled; the towing-path requires raising in a few places near the lock, and to be repaired along the whole length.

Deepening and enlarging is required along these parts of the canal, as will be seen by the following Table :—

(2.) Navigation from Portumna to Athlone.

TABLE.

Distance.	Depth.		Required Deepening		Distance.	Depth.		Required Deepening		Distance	Depth.		Required Deepening.		Distance.	Depth.		Required Deepening.	
	Ft.	In.	Ft.	In.		Ft.	In.	Ft.	In.		Ft.	In.	Ft.	In.		Ft.	In.	Ft.	In.
Upper Sill of Lock Athlone.						5	3	1	3	80	5	3	1	3	100	5	9	0	9
	5	0	—			4	9	1	9		5	6	1	0		5	9	0	9
	5	0	1	6		5	6	1	0		5	6	1	0		5	9	0	9
	3	9	2	9		5	6	1	0		5	3	1	3		5	9	0	9
	4	6	2	0		5	6	1	0		5	9	0	9		6	0	0	6
	4	9	1	9		5	6	1	0		5	6	1	0		5	9	0	9
	4	9	1	3		5	6	1	0		5	6	1	0		6	0	0	6
	5	3	1	3		5	6	1	0		6	0	0	6		6	0	0	6
	5	6	1	0		5	9	0	9		5	9	0	9		5	9	0	9
50 chains	5	9	0	9		5	6	1	0		6	0	0	6		5	6	1	0
	5	6	1	0	70	5	9	0	9	90	6	0	0	6	110	5	6	1	0
	4	6	2	0		5	6	1	0		5	9	0	9		5	0	1	6
	4	9	1	9		5	6	1	0		5	3	1	3		5	0	1	6
	4	6	2	0		5	6	1	0		5	6	1	0		5	6	1	0
	4	0	2	6		5	6	1	0		6	6	—			5	3	1	3
	4	0	2	6		5	6	1	0		5	9	0	9	chains	6	0	0	6
	4	9	1	9		5	3	1	3		6	0	0	6	116	6	3	0	3
	4	0	2	6		5	0	1	6		6	0	0	6					
	4	6	2	0		5	6	1	0		6	0	0	6			74)	83	0
60	5	0	1	6		5	3	1	3		6	0	0	6		Average		1	1

The foregoing Table shows the required deepening in the centre part to average one foot one inch, and adding six inches for the slipping in of the banks at the angles, will make it one foot seven inches: hence,

4,884 feet × 30 feet × 1 foot 7 inches = 8,592 cube yards.

Excavation in increasing the sectional area of the canal, by trimming up the side slopes, both above and below the lock, at an average calculation, 2,444 cube yards.

The following are the beacons and piles upon the whole line from Portumna to Athlone; their positions are marked upon the Map; viz.

Entrance to Cloonaheenogue Canal - -	1	stone beacon.
Below Banagher Canal - - - - -	2	ditto.
Above - - ditto - - - - -	3	ditto.
Derryholmes - - - - - -	5	ditto.
Garrymore - - - - - -	2	ditto.
Total Number - - - -	13	stone beacons.

At Derry Island there is - - - -	1	large iron pile.
At Tullymore Ford - - - - -	1	ditto.
At upper end of Long Island - - -	1	ditto.
Total Number - - - -	3	large iron piles.

In addition to the above, there are at various places along the line small iron piles put up, but their dimensions are so small as to render them almost useless, indeed some of them are covered by the winter floods, at which time only they could be of essential service; the large iron piles are much better calculated for the purpose, but the stone beacons would perhaps be the more preferable, were they erected in proper positions and in an efficient manner, but at present they are composed of a thin casing of stone without bond, and the interior is filled with clay and rubbish; this renders them unable to withstand a blow from a barge or vessel, and, in consequence, out of 13 which have been erected three are in a falling state, and three are complete ruins, so that the whole amount of serviceable beacons is thus reduced to 10, viz. seven stone beacons and three iron piles.

From the foregoing observations it will be seen that this whole line of navigation from Portumna to Athlone is in a state of the utmost inefficiency and neglect; this is much to be regretted, as it must be quite evident, from this part of the navigation being central, that any inattention to its efficiency cannot

but

(2.) Navigation from Portumna to Athlone.

but prove detrimental to the commerce of all the other parts; when by the completion and properly maintaining of those works by the Grand Canal Company, it would no doubt be attended with profit to themselves to an incalculable extent, and certainly with benefit to the traders upon the banks of the River Shannon, and to the country at large.

To Colonel Burgoyne, &c. &c. &c.
12 February 1833.

Thomas Rhodes,
Civil Engineer.

(No. 3.)—REPORT upon the River Suck, from the *Shannon* to *Ballyforan*, for the purpose of Reducing the Flood Waters, and for the Drainage of the Lands and Bogs situated on its Borders; also the Practicability of rendering it Navigable.

(3.) Navigation of the River Suck.

The River Suck forms the division of the counties of Galway and Roscommon. It is a remarkably fine river, and with respect to magnitude, appears, by the discharge of water at their junction, not much inferior to the Shannon itself. It takes its rise in the direction of Castlereagh, in the county of Roscommon, and forms a circuitous course of about 60 miles, receiving in its passage a number of tributary streams. It passes near the towns of Roscommon, Athleague, Mount Talbot, Ballyforan, Ballygill, and through the town of Ballinasloe, and enters the Shannon immediately below Shannon Bridge.

The banks and callows along its course are situated low, bordering on an immense extent of bog country, in many places verging close to the river; these parts are inundated in winter to a formidable and ruinous extent, if possible rather of a worse character than on the Shannon, and of the same importance to get rid of, and which are produced by similar causes, viz. eel-weirs, mill-dams, and a few shoals of no great extent, and which, by a proper system of drainage, carried on with the projected improvements of the Shannon, might be effected at a very small cost.

This river, from its junction with the Shannon to Ballyforan Bridge, a distance of 25 miles, (the extent of my survey) is for the principal part so fine a river, and of such noble dimensions, and so capable of being made navigable at all seasons, that it would seem almost a perversion of reason to think of making canals in the line of its vicinity, when facilities offer themselves, as they do, of a much less expensive nature and superior description, for internal traffic by the river.

Seeing such capabilities at hand, I was impressed with an idea of their vast importance to the country, in opening out this communication from the Shannon to Ballyforan and the neighbourhood of Roscommon, as it would tend to improve an extensive circuit of country, affording an easy and expeditious conveyance of the natural produce to the great shipping ports, an interchange of commodities, and it would not be of the least importance in reclaiming the lands, a great portion of which is unproductive, and the atmosphere insalubrious, and present a miserable appearance, rendered so by the winter floods being upon them during upwards of seven months in the year.

With this in view, soundings were taken along the centre part of the river, at the distance of every chain in length (22 yards) from the Shannon, going upwards to Ballyforan, at the lowest summer water; also the levels were taken at the different falls, with the breadth of the river course at a number of places.

No. 10.
No. 11.

A Map has been constructed, showing the course, and a Longitudinal Section prepared, of six inches to the mile, showing the depth from summer water, and the rise of the winter floods; also the various falls, locks and weirs which would be required to render it navigable, and for the improvement of the drainage. By this arrangement the falls of water may be made available for mill-power, and by bringing them into action, would return good interest for the capital invested for carrying these improvements into effect.

I propose constructing the locks and weirs of the same form and dimensions as were designed for the Lower Brusna River to Parsonstown, the length 84 feet and breadth 18; with this difference only, the capacity of the weirs would have to be of larger dimensions, to suit the discharge of so much greater a column of water.

By

(3.) Navigation of the River Suck.

By an inspection of the Section, it will be seen that the River Suck is upon the same levels as the Shannon, as far as the eel-weirs and ford at Correen, where there is a fall of four inches over a narrow ridge of gravel; in this distance it forms a fine navigable channel, in breadth about 200 feet, and sufficiently deep, and continues of nearly the same capacity to Rahallow Ford, where it becomes contracted by the formation of a natural shoal of gravel and stones, but which is of small extent, causing a fall of 10 inches; from thence to Poolbuoy it is rather shallow and winding.

Poolbuoy-mill is situated upon a ridge of mountain clay and gravel, and the dam or weir is formed by a loose collection of stones, stretching in an oblique direction across the stream, and it being so open, it scarcely will retain sufficient water in summer for the purposes of the mill.

The fall at this part is six feet seven inches; but the mill is so disadvantageously situated that only about one half of this fall of water is made use of.

From this part to Ballinasloe the river is partially shallow, but retains its breadth, as described below. At Balinasloe the fall is one foot ten inches; the river takes a very circuitous course, forming several channels, on which are situated three corn-mills, but from the small fall of water they possess, it cannot be expected they can do work to much advantage, and the various obstructions at Poolbuoy must cause the back-water to act upon the wheels, and retard their operations.

The bridge is a very unconnected structure, of several arches, and as various in dimensions, stretching across the several streams, with eel-weirs and mill-dams constructed to pen up the water, which forms a considerable head in winter, and inundating a large tract of country in the direction of the town of Ahascragh, which is situated low, and surrounded by a great extent of bog country; these frequent inundations on the marshy swamps render these parts unproductive, the atmosphere very insalubrious and unhealthy to the inhabitants of the town of Ballinasloe and its vicinity.

From Ballinasloe to Ashford the river presents rather a circuitous course, and is partially shallow; its breadth is 190 feet.

The shoal at Ashford extends about half a mile in length, forming nearly a regular inclined plane, with a fall of five feet. It consists of clay and gravel, forming a natural barrier, added to which eel-weirs are constructed across the stream, which dam up the water, throwing it back over the callows and low lands to the skirts of the bog, which present themselves almost in every direction, the whole making a desolate and sterile appearance.

There is the remains of an old mill, situated near the top of the fall, which appears to have been dismantled of its machinery some time; and I presume, from its improper situation, that it never performed much work.

From Ashford to Ballygill Bridge the breadth of the river is from 90 to 120, 140 and 170 feet, rather circuitous in its form, but sufficient for the drainage or navigation; its section is partially shallow, and at these parts the whole course is covered with long matted grass, sedges and reeds, forming obstructions to the current, and greatly retarding its motion.

Ballygill Bridge appears of recent construction, substantially built, and consists of nine arches, 20 feet span, each affording a clear waterway of 180 feet, which appears quite sufficient for discharging the winter floods; a small shoal of gravel is formed below, and also one above bridge, with an eel-weir thereon, stretching quite across the river. From this place to *Clooncorran Ford*, a distance of nearly a mile, the river is again partially shallow, and the bed of which consists of gravel and stones.

The whole length of the ford is a nearly regular inclined plane, and very little water flows down in summer. The fall at Ballygill Bridge is 2.02 feet, and at Clooncorran Ford 3.35, making together a rise of about five feet four inches, and the total rise from the Shannon to the level below Ballyforan nearly 20 feet.

From the head of this ford to Ballyforan is nine miles, and the river is upon the same level, with the exception of the fall caused by the natural current, which is but trifling, its velocity being so very sluggish that the motion is scarcely perceptible. Nearly the whole of this distance it forms a fine capacious channel, from 100 to 150 and 200 feet wide, but the greater number of parts are 200 feet wide. In this reach there are a few natural shoals, of small extent, which occur at the contracted parts of the river, and these confined places

(3.) Navigation of the River Suck.

appear selected for constructing the eel-weirs. There are one or more at each shoal, formed of stakes and hurdle-work, and in some instances of thick stone walls, the interstices being filled with sods and grass, choking up the river course, and scarcely leaving a place sufficient for a small boat to pass. These obstructions are the chief and principal cause of the great periodical floods inundating the country to such an extent, committing devastation and destruction to property to an incalculable amount, rendering it uninhabitable and unwholesome. This must be a bar to the general improvement of this great district of country until means are adopted for the improvement of the drainage.

In this last distance on each side of the river the bog presents itself, forming almost one continued line, uniting with the river in several parts; the callows and meadows are situated low, and in patches of considerable extent.

My survey having terminated at Ballyforan Bridge, I am not enabled to describe from observation the state of the river above this, but I was informed that it continues nearly of the same character to the vicinity of Roscommon, presenting nearly the same great facilities of rendering it navigable, and for the drainage purposes, as on the lower parts towards the Shannon.

Means of Improvements.

Having given a general description of the River Suck, I shall now proceed to describe the means necessary for carrying on a system of drainage for the permanent relief of the low lands and bogs situated on its course, at the same time keeping in view the line to be formed for the navigable intercourse.

For the purposes of drainage only and preserving the different falls for mill-power, without taking the navigation into consideration, all that appears necessary is simply to erect a weir, of masonry of solid and permanent construction, at the different main falls, in the situation as described on the Section, and to excavate the bed of the river where the various shoals and obstructions occur two feet six inches in depth below the level of the weir, forming the channel 150 feet wide, diminishing upwards along the course of the river in proportion to the discharge found necessary; also adjusting some of the quick bends, cutting away the rushes and grass, and the entire removal of stones and eel-weirs and other impediments, producing an even channel throughout. These works may be executed at a comparatively small sum, which will appear more fully by the Estimates, if carried on with the proposed improvements of the Shannon.

For rendering the Suck navigable in conjunction with the drainage, an additional expense would be incurred in the construction of a lock and gates at each of the weirs, with the depth of excavation sufficient for the section of the canal to afford six feet water over the shoals, as described on the Section, also purchase of land, and for making a towing-path, and the erection of a few culverts across the side drains. The whole line from Poolbuoy-mill offers very great facilities for the execution of the several works, and may be performed almost in a dry state, without the aid of coffer-dams, pumping-engines, &c. The shallow parts below this, which are under the influence of the Shannon, would have to be deepened by being dredged, which may be done without difficulty, and the drainage part might easily be performed in one season.

See Section, No. 11.

By an inspection of the Section, it will be seen that the rise and height of its waters during the winter floods, at its junction with the Shannon, is about six feet, and continues nearly the same uniform rise throughout to Ballyforan Bridge; and by a reference to my Report on the River Shannon at this part, it will be seen that this great rise is caused by the combined obstructions, and of the contracted parts at Banagher Bridge, Counsellor's Ford and Meelick, which, by constructing a weir at the latter place, as proposed, it would be the means of reducing the water to the proposed level, as described by a red line, and continued to Poolbuoy-mill, &c., which would completely relieve the low callows and meadow lands and the lateral drains. The parts coloured red show the proposed deepening for a navigable channel six feet six inches below the surface water of proposed level, and by a similar line two feet six inches below the surface water shows the deepening required for the drainage only.

For the improvement of this river three locks and weirs would only be required to Ballyforan, viz. at Poolbuoy, Ashford and Clooncorran. At Poolbuoy the present rise is six feet seven inches, but by the proposed improvements

(3.) Navigation of the River Suck.

ments it would be increased to eight feet ten inches, and the full height of this fall of water might be applied with effect.

From this place the surface level of summer water would have to be extended to Ashford, by removing the mill-dams, eel-weirs and other obstructions at Ballinasloe; and for the purposes of navigation alone, it would be necessary to excavate a short cut of 12 chains in length across the narrow neck of land on the east end of the bridge, to avoid the very circuitous bend of the river; by the reduction of this level it would relieve the mills from back-water, situated upon the Ahascragh River, and also the extensive tracts of low lands and bog on its banks.

The rise at Ashford would be six feet nine inches, and a situation of much greater importance for commanding work than at Ballinasloe, which would be rendered so by the increased power in the fall of water.

From Ashford the surface water (summer) would be preserved to Ballygill Bridge, and would extend on the same level to Clooncorran Ford, by the removal of the weirs and shoals at Ballygill Bridge, &c., underpinning the piers, and a navigable channel forming under one of the arches; but for the purposes of drainage little more would be required than to clear the river course of the eel-weirs and shoals of stones, gravel and clay, and constructing the weir at Clooncorran, the fall of water at this latter place would then be five feet four inches.

From Clooncorran to Ballyforan Bridge the surface of summer water is proposed to be preserved at or near the same level, widening the channel at some few parts, and excavating the shoals to the depth of two feet six inches for the drainage, and six feet for the navigation, which are fully described in the Section, at the parts coloured red.

Materials for Manure, &c.

Along this river the natural productions for the cultivation of the soil should not be left unnoticed, as they are everywhere bountifully supplied. The bed and banks of the river consist chiefly of marl of the finest quality, also an inexhaustible supply of limestone, gravel and sand, great essentials for reclaiming the bog, and by means of water-carriage it offers an easy and cheap mode of conveyance. Hence it appears by adopting these means for the drainage, and other improvements on the River Suck, large tracts of country, to the amount of a great many thousands of acres, now lying dormant, may be brought into a profitable state of cultivation, and by small investments of capital, judiciously laid out in establishing works of this kind, promoting examples of industry, the means would be obtained of restoring tranquillity and peace to a district rent asunder by factions and acts of disorder.

Estimates.

The accompanying Estimates have been made out with every degree of care, both as to quantities and price, and from the facilities everywhere offered for the execution of the work, together with the low rate of labour in the country, I have every reason to feel confident that they can be performed for the sum specified, and the items put down for the purchase of land, mill sites and machinery, I have no doubt will be found amply sufficient.

To Colonel Burgoyne, &c. &c. &c.
February 8, 1833.

Thomas Rhodes,
Civil Engineer.

(3.) Navigation of the River Suck.

Estimates.

ESTIMATE,

To Improve the Drainage and Perfect the Navigation.

		£.	s.	d.	£.	s.	d.
10,890	cube yards excavation to deepen the shoal and form the river course at Corrcen Ford.						
18,150	cube yards ditto at Rahallow Ford and Island.						
29,040	cube yards ditto at Poolbuoy Mill, including clearing away the mill-dam, &c.						
58,080	- - - - - - - - - a' 6 *d.*	1,452	–	–			
57,200	cube yards excavation, to trimming banks each side of river, casting up and forming path, and adjusting some of the quick turns - - - - - 5 *d.*	1,191	13	4			
	Making the necessary culverts from land and bog drains - - - - - - - - -	100	–	–			
	Lock and weir, wheel-race, &c. at Poolbuoy Mill, similar to those proposed for the Lower Brusna -	3,800	–	–			
	Purchase of land for towing-path, 17 acres - -	1,020	–	–			
14,300	lineal yards stoning and gravelling the towing-path from the Shannon to Poolbuoy Mill - 1 *s.* 6 *d.*	1,072	10	–			
12,936	cube yards excavation, to trimming banks each side of river, forming paths and adjusting some of the quick turns, including some partial deepening to the bottom, from Poolbuoy Mill to Ballinasloe; 5 *d.*	269	10	–			
3,300	lineal yards stoning and gravelling the towing-path - - - - - - - - - 1 *s.* 6 *d.*	247	10	–			
	Making the necessary culverts from land drains -	30	–	–			
	Purchase of land for towing-path from Poolbuoy to Ballinasloe, four acres - - - - - -	240	–	–			
	Contingent expenses - - - - - - -	937	–	–			
	Amount from the Shannon to Ballinasloe - -				10,360	3	4
	Note.—In this Estimate the mill at Poolbuoy is supposed to remain in its present situation, being out of the way of the proposed works. Its value will be much enhanced by these improvements.						
12,672	cube yards excavation, to make cut across neck of land at Ballinasloe Bridge, (East end) - - 5 *d.*	264	–	–			
	Building accommodation bridge across the Athlone road, with retaining walls, &c., complete - -	300	–	–			
	Purchase of mill sites and machinery - - - -	3,000	–	–			
	Clearing away mill-dams, eel-weirs, and other obstructions in the river course and under the bridge	150	–	–			
24,849	cube yards excavation in deepening various parts of the river course, trimming the banks, and forming paths, and adjusting some of the quick turns from Ballinasloe to Ashford - - - 5 *d.*	517	13	9			
2,662	lineal yards stoning and gravelling the towing-path - - - - - - - - - 1 *s.* 6 *d.*	199	13	–			
	Making the necessary culverts from the side drains	40	–	–			
	Purchase of land for towing-path, three acres - -	180	–	–			
	Contingent expenses - - - - - - -	465	–	–			
	Amount from Ballinasloe to Ashford - - -				5,116	6	9
	Constructing lock and weir at Ashford - - - - -	3,500	–	–			
62,436	cube yards excavation to deepen and form channel at Ashford, and adjust some of the quick turns.						
50,820	cube yards ditto from Ashford to Ballygill Bridge, including trimming and forming the banks.						
113,256	- - - - - - - - - a' 5*d.*	2,359	10	–			

(3.) Navigation of the River Suck.

Estimates.

	£.	s.	d.	£.	s.	d.
52,800 cube yards excavation in deepening and forming channel from Ballygill Bridge to Clooncoran Ford, including forming banks, clearing away eel-weirs, &c. - - - - - - - 5*d.*	1,100	-	-			
66 cube yards masonry, to underpin piers of Ballygill Bridge - - - - - - 13*s.* 6*d.*	44	11	-			
Making the necessary culverts from side drains -	60	-	-			
Purchase of land for towing-path from Ashford to Clooncoran, six acres - - - - - -	360	-	-			
Contingent expenses - - - - - -	742	-	-			
Amount from Ashford to Clooncoran - - -				8,166	1	-
Constructing weir and lock at Clooncoran Ford -	3,500	-	-			
21,120 cube yards excavation, in deepening and forming channel at Clooncoran Ford, trimming banks, &c. - - - - - - - - - 5*d.*	440	-	-			
130,680 cube yards deepening and forming channel, and clearing away eel-weirs from Clooncoran to Ballyforan Bridge - - - - - 5*d.*	2,722	10	-			
69,344 cube yards trimming banks and forming paths, adjusting some of the quick turns in the river course, &c. - - - - - - - 5*d.*	1,444	13	4			
17,336 lineal yards stoning and gravelling the towing-path - - - - - - - 1*s.* 6*d.*	1,300	4	-			
Purchase of land for towing-path, 21 acres - -	1,260	-	-			
Making the necessary culverts from side drains -	100	-	-			
Contingent expenses - - - - - - -	1,076	-	-			
				11,843	7	4
TOTAL Amount from the River Shannon to Ballyforan Bridge - - - - £.				35,485	18	5

Note.—Not having obtained information as to the value of the eel-weirs, there is no item in this Estimate for their compensation, and I am of opinion, from their appearance, that their value must be very inconsiderable.

Thomas Rhodes.

ESTIMATE for Perfecting the DRAINAGE only.

		£.	s.	d.	£.	s.	d.	£.	s.	d.
2,896	cube yards excavation to deepen the channel, lower the island, and clear away the weirs at Correen Ford.									
16,335	cube yards ditto to the shoal and island at Rahallow Ford.									
18,876	cube yards ditto to the shoal (below the weir) at Poolbuoy Mill.									
38,107	- - - - - - - - a' 5 *d.*				793	17	11			
10,500	cube feet masonry in arch, stones and coping to face, and top of weir (at Poolbuoy) beds and joints dressed in face, and set in good water cement - - - - - 10 *d.*	437	10	–						
666	cube yards rubble work in ditto, 13 *s.* 6 *d.*	449	11	–						
333	cube yards rough paving at bottom of ditto - - - - - - 5 *s.*	83	5	–						
					970	6	–			
	Contingent expenses - - - - - - -				176	8	–			
	Amount from Shannon to Ballinasloe - - -							1,940	11	11
	Clearing away mill-dams, eel-weirs, and other obstructions in the river course and under the bridge at Ballinasloe - - - - - - - -				150	–	–			
	Purchase of mill sites and machinery at Ballinasloe -				3,000	–	–			
5,808	cube yards excavation in deepening channel in various places, from Ballinasloe to Ashford - - 5 *d.*				121	–	–			
	Contingent expenses - - - - - - -				27	2	–			
	Amount from Ballinasloe to Ashford - - -							3,298	2	–
	Weir at Ashford, similar to that proposed for Poolbuoy - -				970	6	–			
10,164	cube yards excavation in deepening shoal above the weir.									
5,445	cube yards ditto, from Ashford to Ballygill Bridge, and widening the river course in some parts.									
11,979	cube yards ditto, from Ballygill Bridge to Clooncoran Ford, including clearing away eel-weirs.									
27,588	- - - - - - - - - - 5 *d.*				574	15	–			
	Contingent expenses - - - - - - -				154	10	–			
	Amount from Ashford to Clooncoran - - -							1,699	11	–
	Weir at Clooncoran similar to that proposed for Poolbuoy - - - - - - - - -				970	6	–			
7,986	cube yards, deepening bed of river at Clooncoran Ford, above the weir.									
8,349	cube yards ditto, from Clooncoran Ford to Ballyforan Bridge, including clearing away eel-weirs, &c.									
16,335	- - - - - - - - - 5 *d.*				340	6	3			
	Contingent expenses - - - - - - -				131	–	–			
	Amount from Clooncoran to Ballyforan Bridge -							1,441	12	3
	TOTAL Amount from the River Shannon to Ballyforan Bridge - - - - £.							8,379	17	2

Thos. Rhodes.

SOUNDINGS taken of the River *Suck*, from its Junction with the *Shannon* to *Ballyforan Bridge*, 3d July 1832; Datum 7 feet 5 inches on Banagher Lock Sill.

Col. 1.

	Ft.	In.
	20	0
	22	0
	22	0
	23	0 ×
	23	6
	24	0
	22	0
	23	0 ×
Chains	21	0
10	23	0
	23	0
	23	0 ×
	24	0
	24	6
	24	0
	24	0 ×
	24	0
	23	6
	25	6
20	25	6 ×
	29	0
	31	0
	28	0
	26	0 ×
	26	0
	26	0
	26	0
	24	0 ×
	24	0
30	25	0
	23	0
	24	0 ×
	24	0
	23	6
	25	0
	25	0 ×
	24	0
	24	0
	26	0
40	25	0 ×
	26	0
	22	0
	23	0
	20	0 ×
	19	0
	21	0
	22	0
	24	0 ×

Col. 2.

	24	6
50	26	0
	23	0
	23	0 ×
	23	0
	23	0
	24	0
	22	0 ×
	22	0
	23	0
	24	0
60	24	0 ×

Col. 2. *continued.*

	Ft.	In.
	24	6
	24	0
	20	0
	20	0 ×
	24	0
	19	0
	14	0
	9	0 ×
	11	0
70	17	0
	9	0
	8	6 ×
	9	6
	26	0
	24	0
	20	0 ×
	23	0
	20	0
1 mile	26	0
80	26	0 ×
	26	0
	26	0
	27	0
	27	0 ×
	26	0
	27	0
	26	0
	26	0 ×
	26	0
90	25	0
	23	0
	23	0 ×
	24	0
	23	0
	21	0
	21	6 ×

Col. 3.

	21	0
	21	6
	23	0
100	22	0 ×
	18	0
	14	0
	12	0
	14	0 ×
	15	0
	15	6
	19	0
	18	0 ×
	13	0
110	16	0
	17	6
	20	6 ×
	22	0
	22	0
	23	6
	23	0 ×
	22	0
	22	0
	22	0
120	29	0 ×

Col. 3. *continued.*

	Ft.	In.
	35	0
	28	0
	28	6
	24	0 ×
	17	0
	16	6
	18	0
	18	0 ×
	17	0
130	16	6
	17	6
	19	0 ×
	20	6
	22	0
	24	0
	26	0 ×
	27	0
	28	0
	27	6
140	28	0 ×
	29	0
	26	0
	26	0
	21	0 ×

Col. 4.

	18	0
	18	0
	23	0
	23	0 ×
	23	0
150	23	0
	23	0
	24	0 ×
	22	0
	21	0
	19	6
	19	0 ×
	18	6
	19	0
2 miles	19	6
160	23	6 ×
	21	6
	18	0
	18	6
	20	0 ×
	18	0
	16	0
	16	0
	16	0 ×
	13	0
170	12	6
	13	0
	16	0 ×
	16	6
	16	0
	16	0
	18	0 ×
	17	0
	16	0
	16	0
180	14	0 ×

Col. 4. *continued.*

	Ft.	In.
	10	0
	10	6
	13	0
	14	0 ×
	15	0
	16	0
	15	6
	10	0 ×
	6	0
190	7	0
	9	6
	13	0 ×

Col. 5.

	8	0
	11	0
	6	0
	10	0 ×
	10	0
	11	0
200	6	0
	13	0 ×
	15	0
	16	6
	15	0
	16	0 ×
	15	0
	16	6
	16	6
	15	0 ×
210	16	6
	17	0
	17	6
	18	6 ×
	21	0
	26	6
	29	6
	28	0 ×
	25	0
	24	6
220	24	0
	21	0 ×
	22	0
	21	0
	20	0
	20	6 ×
	19	0
	19	0
	20	0
	20	0 ×
230	19	6
	19	0
	21	6
	22	0 ×
	20	0
	18	0
	20	0
	21	0 ×
	20	0
3 miles	18	6
240	16	0
	18	6 ×

Col. 6.

	Ft.	In.
	20	0
	21	0
	21	6
	22	0 ×
	21	0
	23	0
	21	0
	20	6 ×
250	19	6
	21	0
	18	0
	20	0 ×
	20	6
	19	0
	18	6
	18	6 ×
	19	0
	18	0
260	17	0
	19	0 ×
	20	0
	19	0
	16	6
	16	0 ×
	15	6
	14	0
	14	0
	14	0 ×
270	14	0
	15	6
	17	0
	17	6 ×
	19	0
	18	6
	17	6
	17	6 ×
	17	0
	17	6
280	17	6
	17	6 ×
	16	0
	18	6
	18	0
	18	0 ×
	17	0
	17	6
	16	6
	18	6 ×
290	21	0
	21	0
	16	6
	16	0 ×
	16	0
	16	0
	16	0

Col. 7.

	16	6 ×
	16	6
	16	6
300	16	0
	16	0 ×

(continued)

Soundings of the River Suck—*continued.*

	Col. 7. *continued.* Ft.	In.	
	17	6	
	17	0	
	17	0	
	16	6×	
	18	0	
	18	6	
	17	6	
	15	0×	
310	15	0	
	14	0	
	13	0	
	21	0×	
	8	0	
	9	0	
	11	6	
	7	0×	
	6	0	
4 miles	6	0	
320	5	0	
	5	0×	
	6	6	
	9	0	
	16	0	
	16	6×	
	17	6	
	17	6	
	16	6	
	14	0×	
330	12	0	
	10	6	
	10	0	
	10	0×	
	11	6	
	12	0	
	12	6	
	13	0×	
	13	0	
	13	6	
340	13	0	
	12	6×	
	12	0	
	12	6	
	12	0	
	14	0×	
	15	0	
	14	0	
	14	0	
	16	0×	
350	23	0	
	23	0	
	Col. 8.		
	—		Correen Island on left hand and weir.
	—	×	
	—		
	—		
	7	0	
	11	6×	
	13	0	
	13	0	
360	14	6	
	16	0×	
	14	6	
	16	0	
	13	6	
	16	0×	
	16	0	
	16	0	
	16	0	
	16	0×	
370	15	6	
	17	0	

	Col. 8. *continued.* Ft.	In.
	18	0
	16	0×
	17	0
	16	6
	16	6
	16	6×
	16	0
	16	0
380	17	6
	19	0×
	20	6
	21	0
	21	6
	21	6×
	21	6
	21	0
	22	6
	23	0×
390	19	6
	19	0
	20	0
	20	0×
	19	0
	18	0
	18	0
	18	0×
	18	0
5 miles	18	0
400	19	0
	18	6×
	19	6
	19	6
	19	6
	19	6×
	20	0
	20	6
	Col. 9.	
	21	0
	21	0×
410	20	6
	19	6
	19	6
	19	0×
	18	0
	17	6
	17	6
	17	6×
	18	0
	18	0
420	19	0
	17	6×
	17	0
	17	6
	17	0
	17	0×
	17	6
	19	0
	21	6
	22	0×
430	23	6
	23	6
	20	6
	19	6×
	18	0
	16	0
	16	0
	15	0×
	15	0
	15	6
440	15	0
	15	0×

	Col. 9. *continued* Ft	In
	15	6
	17	6
	20	0
	18	6×
	18	6
	20	6
	20	6
	20	0×
450	20	0
	19	6
	19	0
	18	0×
	19	0
	19	6
	21	0
	22	6×
	23	0
	20	6
460	22	6
	16	0×
	16	0
	17	0
	Col. 10.	
	15	6
	16	6×
	15	0
	12	6
	13	6
	17	6×
470	19	0
	20	0
	18	0
	15	0×
	14	0
	17	0
	17	0
	16	0×
	17	0
6 miles	17	0
480	17	0
	17	6×
	15	6
	17	6
	16	0
	14	6×
	15	6
	16	6
	16	6
	15	6×
490	15	6
	19	0
	18	6
	16	6×
	19	0
	19	6
	17	6
	16	6×
	17	0
	16	6
500	17	0
	16	0×
	17	0
	18	0
	16	6
	15	0×
	10	6
	13	6
	13	6
	13	6×
510	13	6
	17	0

	Col. 10. *continued.* Ft.	In.	
	17	0	
	17	0×	
	13	6	
	16	0	
	16	0	
	16	0×	
	16	0	
	Col. 11.		
	16	6	
520	14	6	
	11	0×	
	13	0	
	12	6	
	12	0	
	12	0×	
	11	0	
	12	0	
	12	6	
	13	0×	
530	13	0	
	13	6	
	16	0	
	18	0×	
	19	0	
	17	0	
	15	0	
	14	0×	
	19	0	
	19	6	
540	19	0	
	19	0×	Bay on right hand.
	11	0	
	10	0	
	15	0	
	4	0×	
	5	0	
	4	9	
	9	0	
	5	0×	
550	3	6	
	4	9	
	6	0	
	8	9×	
	7	3	
	10	0	
	10	9	
	11	0×	
	10	6	
7 miles	9	0	
560 Weir and Shoal.	7	3	
	5	6×	
	7	0	
	—		
	—		Rahallow.
	—	×	
	2	3	
	3	6	
	4	3	
	3	0×	
570 Island.	4	3	
	9	9	
	11	0	
	9	0×	
	Col. 12.		
	11	0	
	12	0	
	9	0	
	10	6×	
	10	0	

	Col. 12. *continued.* Ft.	In.	
	11	6	
580	10	0	
	10	0×	
	12	0	
	12	6	
	14	0	
	11	0×	
	10	6	
	8	6	
	9	0	
	9	6×	
590	9	0	
	8	6	
	9	6	
	9	9×	
	9	9	
	8	6	
	8	0	
	6	0×	
	5	0	
	11	3	
600	10	0	
	8	0×	
	12	0	
	13	0	
	8	0	
	8	6×	
	9	0	
	9	0	
	8	0	
	7	0×	
610	4	3	
	5	0	
	3	5	
	1	9×	
	1	3	
	0	9	
	0	5	
Mill Race	0	4×	
	1	3	
	1	0	
620	1	3	
	1	0×	
	1	7	
	1	0	
	1	0	
	1	0×	
	—		
	—		
	—		
	Col. 13.		
	1	9×	
630	1	9	
	1	9	
	2	0	
	1	0×	
	2	0	
	1	6	
	1	6	
	—	×	Poolbury Mill on left hand.
	—		
	—		
8 miles 640	—		
	—	×	
	—		
	—		
	—	×	
	4	3	
	3	6	
	4	6	

SOUNDINGS OF THE RIVER SUCK—*continued.*

	Col. 13. *continued.*		
	Ft.	In.	
	4	6+	
650	5	6	
	5	9	
	5	9	
	7	0+	
	9	3	
	11	6	
	9	0	
	13	0+	
	8	0	
	9	0	
660	9	0	
	9	0+	
	14	0	
	12	0	
	11	0	
	13	0+	
	13	0	
	13	6	
	9	6	
	8	0+	
670	8	0	
	9	6	
	6	0	
	4	0+	
	3	0	
	3	0	
	9	0	
	10	0+	
	6	0	
	4	3	
680	7	0	
	5	6	
	2	6+	
	6	3	
	Col. 14.		
	6	6	
	5	0	
	5	3+	
	7	0	
	11	6	
	5	3	
690	7	6+	
	6	9	
	10	0	
	11	9	
	11	0+	
	11	6	
	10	0	
	11	6	
	8	0+	
	8	0	
700	7	3	
	8	0	
	8	6+	
	5	9	
	7	0	
	8	6	Branch.
	8	9+	
	11	0	
	9	3	
	8	6	
710	7	3+	
	7	0	
	7	0	
	9	6	
	6	0+	
	6	6	
	5	9	
	5	6	
	6	6+	

	Col. 14. *continued.*		
	Ft.	In.	
9 miles	7	0	
720	5	0	
	5	0	
	6	0+	
	7	6	
	9	6	
	9	3	
	6	6+	
	6	9	
	6	6	
	8	0	
730	8	6+	
	10	6	
	11	3	
	7	9	
	11	0+	
	12	0	
	10	0	
	10	6	
	10	0+	
	Col. 15.		
	12	0	
740	12	6	
	12	6	
	13	0+	
	13	6	
	10	6	
	8	0	
	11	0+	
	12	0	
	13	0	
	15	6	
750	12	0+	
	8	0	
	10	6	
	11	0	
	8	6+	
	8	6	
	8	0	
	8	0	
	12	0+	
	14	6	
760	14	0	
	13	6	
	13	6+	
	9	0	
	8	6	
	9	0	
	9	6+	
	10	0	Sharp turn
	13	0	on left.
	9	6	
770	13	6+	
	7	0	
	6	0	
	7	0	
	7	0+	
	6	6	
	5	6	
	7	0	
	4	6+	
	3	9	
780	3	6	
	3	9	
	4	9+	
	5	0	
	7	9	
	6	3	
	6	6+	
	4	3	
	5	3	

	Col. 15. *continued.*		
	Ft.	In.	
	6	9	
790	8	3+	
	7	6	
	7	6	
	6	3	
	Col. 16.		
	7	3+	
	6	6	
	8	6	
	5	9	
	4	6	
10 miles	7	3	
800	8	0	
	8	3	
	4	9	
	6	9	
	8	0	
	7	0	
	5	3	Chapel Wall
	4	9	on left; turning
	7	9	on right to
	7	3	the Bridge
	4	0	
	1	9	
815	1	6	Ballinasloe Bridge.

Commenced again at the upper end of Mill Stream.

	15	0	
	16	6	
	17	6	
	20	0	
	17	0+	
	16	6	
	14	0	
	16	0	
	14	0+	
Chains	9	0	
10	10	0	
	12	6	
	8	0+	
	8	0	
	8	0	
	7	0	
	10	0+	
	13	0	
	9	6	
	7	6	
20	5	0+	
	4	9	
	4	0	
Sandy bottom.	5	9	
	5	6+	
	5	0	
	3	9	
	3	6	
	7	3+	
	5	6	Branch from
30	7	6	Killeloony Mill
	6	0	
	7	6+	
	Col. 17.		
	11	3	
	14	0	
	12	6	
	13	0+	
	9	0	
	9	0	
	5	6	

	Col. 17. *continued.*		
	Ft.	In.	
40	8	0+	
	10	0	
	10	0	
	12	0	
	11	0+	
	14	0	
	12	6	
	11	6	
	7	6+	
	9	0	
50	11	6	
	11	6	
	10	6+	
	9	6	
	12	6	
	12	0	
	12	0+	
	13	0	
	13	0	
	13	0	
60	12	6+	
	12	0	
	11	0	
	10	0	
	12	0+	
	13	0	
	15	6	
	10	0	
	8	6+	
	9	6	
70	12	0	
	10	0	
	9	0+	
	10	0	
	10	0	
	9	0	
	11	0+	
	10	6	
	6	6	
11 miles	7	0	
80	7	0+	
	6	3	
	5	6	
	4	0	
	4	0+	
	4	6	
	5	0	
	Col. 18.		
	5	0	
	3	3+	
	4	9	
90	5	6	
	7	3	
	8	0+	
	8	3	
	7	3	
	7	0	
	5	0+	River bends
	3	6	to the right.
	2	9	
	4	0	80 feet
100	5	3+	wide.
	5	6	
	4	6	
	2	6	
	2	3+	
	2	3	Ashford
	3	6	shoal begins.
	5	3	
	5	9+	
	5	0	
110	6	3	

	Col. 18. *continued.*		
	Ft.	In.	
	8	0	
	6	6+	
	3	9	
	4	3	
	4	6	
	6	6+	
	4	3	
	2	0	
	1	6	
120	1	0+	
	0	9	
	1	0	
	1	0	
	1	3+	
	0	9	
	1	0	
	0	6	
	1	0+	
	1	0	
130	1	0	
	1	0	
	1	0+	
	1	0	
	1	6	
	1	0	
	1	0+	
	1	0	
	1	0	
	1	0	
140	1	0+	
	Col. 19.		
	1	0	
	0	9	
	0	9	
	1	0+	
	1	0	
	1	0	
	0	9	
	0	9+	
	1	3	
150	1	3	
	1	0	
	1	3+	
	1	3	
	0	9	
	0	9	
	0	9+	
	0	9	
	0	9	
	0	9	
160	0	9+	
12 miles	1	3	
Weir	1	6	Old Mill Race
across	1	6	on right hand.
	1	3+	
	1	0	
	1	0	
	1	0	
	1	6+	
	1	6	
170	1	6	
	1	9	
	2	0+	
	2	0	
	2	0	
	3	0	
	3	0+	
	3	0	
	3	0	
	3	0	
180	3	0+	
	3	0	
	3	0	

(*continued*)

Soundings of the River Suck—*continued.*

Col. 19. *continued.*

	Ft.	In.	
	3	0	
	3	0+	
	3	0	
	3	3	
	3	6	
	3	6+	Top of old Race.
	3	9	
190	3	9	
	4	0	River 120 feet wide.
	8	3+	
	8	0	
	8	9	

Col. 20.

	7	6	
	7	0+	
	7	3	
	9	9	
	10	0	
200	7	6+	
	7	6	
	7	9	
	7	9	
	8	0+	
	10	0	
	10	3	
	9	6	
	8	0+	
	9	0	
210	9	0	
	7	9	
	6	0+	
	6	0	
	5	6	
	2	9	
	2	3+	
	3	3	
	4	6	
	5	6	
220	5	3+	
	4	3	
	4	3	
	4	9	
	5	3+	
	5	3	
	5	0	
	6	0	
	3	9+	
	3	3	
230	6	0	
	5	0	
	6	6+	
	4	6	
	2	6	
	5	3	
	5	0+	
	3	9	
	5	3	
13 miles	5	9	
240	7	6+	
	10	3	
	6	6	
	9	3	
	6	0+	
	6	6	
	6	3	
	7	0	River bends left 90°.
	6	6+	Branch.

Col. 21.

	Ft.	In.	
	8	6	
250	6	0	
	6	3	River 140 feet wide.
	7	0+	
	4	0	
	4	6	
	3	6	
	3	6+	
	3	0	
	3	6	
	3	9	
260	2	0+	
	2	3	
	2	6	
	2	6	
	3	0+	
	3	0	
	2	6	
	3	0	
	3	0+	
	2	3	
270	3	9	
	4	9	River 90 feet wide.
	4	9+	
	5	0	
	12	0	
	12	0	
	8	0+	
	9	0	
	11	0	
	11	6	
280	9	0+	
	9	6	
	11	6	
	12	0	
	12	0+	
	11	6	
	12	0	
	13	0	
	14	0+	
	9	0	
290	9	6	
	13	0	
	13	6+	River 170 feet wide.
	13	0	
	14	0	
	14	0	
	12	0+	
	11	6	
	10	0	
	10	6	
300	10	0+	
	6	0	
	8	6	
	13	0	

Col. 22.

	18	6+	
	14	0	Branch.
	10	0	
	8	0	
	5	6+	
	5	9	
310	4	0	
	1	9	
	4	6+	
	7	3	
	4	6	
	4	9	
	7	9+	
	5	9	
	4	3	

Col. 22. *continued.*

	Ft.	In.	
14 miles	6	0	
320	4	9+	
	4	6	
	3	6	
	3	3	
	2	6+	
	2	0	
	2	0	
	2	0	
	2	0+	
	2	6	
330	4	0	
	4	9	
	3	0+	
	2	9	
	2	0	
	2	0	
	2	0+	
	2	0	Ballygill Bridge.
	1	3	
	1	3	
340	1	3+	
	1	6	
	1	6	
	1	6	Weir and small Islands.
	1	6+	
	1	6	
	2	0	
	3	0	
	3	3+	
	1	9	
350	1	9	
	5	0	
	4	9+	
	9	6	
	9	0	
	6	0	
	7	3+	Branch.
	12	3	

Col. 23.

	5	0	
	3	6	
360	2	9+	Grass and Rushes.
	3	0	
	3	0	
	2	9	
	2	6+	
	2	3	
	2	0	
	2	0	
	5	0+	
	5	0	
370	7	0	
	7	3	
	5	6+	
	4	6	
	15	0	
	12	0	
	4	9+	
	4	6	
	4	9	
	6	6	
380	5	3+	
	6	6	
	1	9	
	2	6	
	2	0+	
	2	3	
	2	0	
	2	0	
	2	0+	

Col. 23. *continued.*

	Ft.	In.	
	2	0	
390	2	0	
	2	0	
	2	0+	
	2	0	
	2	0	
	2	3	
	1	9+	
	1	6	
	1	0	
15 miles	1	3	
400	4	9+	
	2	9	
	2	0	
	2	0	
	2	0+	
	2	3	
	2	0	
	1	3	
	1	3+	
	1	9	
410	1	9	
	1	9	

Col. 24.

Clooncoran Ford.	1	9+	Clooncoran, belonging to Captain O'Moore.
	1	0	
	1	9	
	1	9	
	1	9+	
	2	0	
	2	3	
	4	0	
420	4	0+	
	4	6	
	6	0	
	7	9	
	8	6+	
	10	0	
	4	0	
	8	0	
	8	0+	
	4	0	
430	2	0	
	3	6	
	2	6+	
	5	0	
	5	9	
	8	3	Island on left hand.
	8	3+	
	9	3	
	8	0	
	5	0	
440	3	6+	
	8	3	
	8	6	
	8	3	
	3	9+	
	11	0	
	3	6	
	3	6	
	3	6+	
	3	6	
450	5	0	
	7	0	
	6	6+	
	6	9	Callagh Ford and Islands.
	2	0	
	1	9	
	3	0+	
	7	9	
	4	0	

Col. 24. *continued.*

	Ft.	In.	
Callagh,	2	6	
460	7	0+	
belonging to Ross Mahon, Esq.	7	6	
	7	6	
	13	0	
	11	6+	
	12	6	

Col. 25.

	13	0	
	11	6	
	7	6+	
	7	6	
470	7	3	
	8	0	
	10	0+	
	12	6	Island on right.
	12	0	
	14	0	
	16	6+	
	14	6	
	7	0	Sharp turn to left hand.
16 miles	7	6	
480	9	3+	
	10	–	
	6	3	
	9	3	
	12	6+	
	16	6	
	16	6	Sharp turn to left hand.
	14	0	
	18	0+	
	17	6	
490	17	6	
	16	0	River 80 feet wide.
	16	0+	
	10	6	
	11	6	
	13	6	Sharp turn to right hand.
	9	6+	River choked with weeds.
	4	6	
	2	6	
	2	6	
500	1	9+	
	2	6	
	1	9	
	3	0	
	3	6+	
	2	6	
	3	0	
	3	0	
	4	9+	Weir. River much contracted.
	3	0	
510	3	0	
	8	3	
	12	0+	
	7	3	
	7	9	
	7	0	
	7	3+	
	7	6	
	4	3	
	8	0	

Col. 26.

520	13	0+	
	12	0	
	13	0	
	11	6	

Soundings of the River Suck—*continued.*

Col. 26. *continued.*

	Ft.	In.	
	13	0+	River 100 feet wide.
	13	0	
	13	6	
	14	0	
	14	6+	
	14	0	
530	13	0	
	12	0	
	12	0+	
	12	0	
	12	0	
	11	6	
	11	6+	
	12	6	
	12	6	
	9	0	
540	15	0+	
	8	6	
	6	6	
	10	0	
	12	6+	
	6	6	
	10	0	
	11	6	
	21	6+	
	20	0	
550	20	0	
	18	0	
	6	0+	
	10	0	
	12	6	
	10	6	
	14	0+	
	14	6	
	14	0	
17 miles	14	0	
560	15	0+	
	17	0	
	16	6	
	21	0	
	19	6+	
	14	6	
	9	0	
	10	0	
	9	0+	
	9	0	
570	9	0	
	4	0	
	4	0+	
	5	9	
	7	6	

Col. 27.

	7	3	
	9	9+	
	8	6	
	6	3	
	6	6	
580	4	6+	
	11	3	
	9	0	
	5	6	
	4	9+	
	9	0	
	12	0	
	9	0	
	10	6+	
	7	3	
590	5	9	
	5	6	
	6	3+	
	8	3	

Col. 27. *continued*

	Ft.	In.	
	7	3	
	7	9	
	3	9+	
	4	0	
	6	0	Island on left hand. River contracted.
	7	3	
600	5	6+	
	7	9	
	9	6	Wide again.
	12	6	
	15	6+	
	17	6	
	11	6	
	11	6	
	12	0+	
	15	0	
610	14	0	
	12	6	
	16	0+	
	16	6	
	19	0	
	16	0	
	11	0+	
	7	0	
	7	3	
	5	0	
620	3	6+	Contracted, with Shoal, Rushes, and small Island.
	5	0	
	7	9	
	8	6	
	7	9+	
	8	6	
	9	9	
	12	0	
	12	6+	
	9	6	

Col. 28.

	Ft.	In.	
630	9	0	
	8	6	
	15	6+	
	12	6	
	14	0	
	12	0	
	16	6+	
	20	0	
	22	6	
18 miles	17	6	
640	14	0+	
	9	6	
	9	6	
	15	0	
	18	0+	
	18	0	
	18	6	
	18	0	
	17	0+	
	12	0	
650	5	6	
	7	0	
	9	6+	
	11	0	
	14	6	
	12	6	
	12	0+	
	8	0	
	11	6	
	14	6	
660	8	0+	
	11	0	
	11	0	

Col. 28. *continued.*

	Ft.	In.	
	11	6	
	13	0+	
	7	0	
	8	6	
	7	9	
	7	9+	
	9	0	
670	9	0	
	7	6	
	5	3+	
	3	3	
	5	3	
	8	0	
	6	6+	
	4	0	
	3	6	
	4	9	
680	4	9+	
	4	9	
	6	0	
	8	9	
	7	9+	

Col. 29.

	13	0	
	16	6	
	18	0	
	18	0+	
	22	0	
690	22	0	
	23	0	
	22	0+	
	22	0	
	21	0	
	24	6	
	22	6+	
	22	6	
	21	6	
	21	6	
700	19	0+	
	17	6	
	17	0	
	17	0	
	17	0+	
	17	0	
	17	0	
	17	0	
	16	0+	
	16	0	
710	15	0	
	15	6	
	15	6+	
	16	0	
	16	6	
	15	0	
	14	0+	
	15	0	
	14	0	
19 miles	14	0	
720	12	0+	
	12	0	
	12	0	
	14	0	River 200 feet wide.
	16	0+	
	19	0	
	17	6	
	17	6	
	17	6+	
	17	6	
730	23	0	
	25	6	
	17	6+	

Col. 29. *continued.*

	Ft.	In.	
	17	6	
	16	6	
	16	6	
	16	0+	
	17	0	
	16	0	
	16	0	

Col. 30.

740	17	0+	
	17	0	
	13	0	
	12	0	
	12	0+	
	10	0	
	9	0	
	9	0	
	10	0+	
	12	6	
750	12	0	
	12	0	
	10	0+	
	10	0	
	10	0	
	9	6	
	9	6+	
	10	3	
	10	6	
	12	6	
760	12	6+	
	12	0	
	12	0	
	13	0	
	13	0+	
	16	6	
	16	6	
	19	0	
	19	0+	
	19	0	
770	19	0	
	19	6	
	17	6+	
	17	6	
	22	0	
	18	0	
	18	0+	
	18	6	
	18	6	
	20	0	
780	12	6+	River contracted to 100 feet.
	13	6	
	7	6	
	15	0	
	9	0+	
	9	0	
	9	0	
	7	6	
	8	3+	
	9	0	
790	11	6	
	10	0	
	8	6+	
	11	6	
	8	0	

Col. 31.

	6	0	
	4	9+	
	7	9	
	11	6	

Col. 31. *continued.*

	Ft.	In.	
20 miles	12	6+	
800	9	0	
	10	0	River 180 feet wide.
	10	0	
	10	0+	
	15	0	
	14	0	
	15	0	
	17	0+	
	16	6	
	14	0	
810	17	0	
	23	0+	
	19	0	
	22	6	
	22	0	
	22	0+	
	22	0	
	21	0	
	20	6	
	20	6+	
820	18	6	
	18	6	
	15	0	
	17	0+	
	18	0	
	18	0	
	18	0	
	17	6+	
	17	6	
	18	0	
830	22	0	
	22	0+	
	23	0	
	22	0	
	22	0	
	21	0+	
	16	6	
	16	6	
	17	6	
	17	6+	
840	15	0	
	15	0	
	13	6	
	13	6+	
	14	0	
	13	6	
	13	6	
	14	6+	
	14	0	
	13	0	

Col. 32.

850	10	0	
	12	0+	
	12	0	
	6	0	
	6	6	
	7	6+	
	10	0	
	8	0	
	8	0	
	8	0+	
860	4	9	
	3	9	
	3	6	
	3	6+	
	3	6	
	3	0	
	3	0	
	3	6+	
	8	0	

(continued)

Soundings of the River Suck—*continued.*

	Col. 32. *continued.*		
	Ft.	In.	
	6	6	
870	6	9	Derryyarbill Ford.
	4	0+	
	2	6	
	2	6	
	2	6	
	2	0+	
	2	0	
	1	0	Weir across.
	1	0	
21 miles	2	6+	
880	2	6	
	3	9	
	9	6	
	7	3+	
	7	3	
	10	0	
	14	6	
	14	6+	
	18	3	
	18	6	
890	18	0	
	18	0+	
	22	6	River 150 ft. wide.
	22	6	
	20	6	
	22	0+	
	22	0	
	22	0	
	24	0	
	23	6+	
900	19	6	
	19	6	
	23	0	
	21	6+	
	20	0	
	Col. 33.		
	15	0	
	15	0	
	21	0+	
	21	0	
	22	6	
910	25	0	
	21	6+	
	21	6	
	21	0	
	20	0	
	15	0+	
	15	0	
	18	0	
	18	0	
	18	6+	
920	16	0	
	13	6	
	26	0	
	23	6+	
	27	0	
	27	0	
	33	0	
	31	0+	
	30	0	
	33	0	
930	28	0	
	24	0+	
	24	0	
	19	0	
	23	0	
	19	0+	
	19	0	
	21	0	

	Col. 33. *continued.*		
	Ft.	In.	
	31	0	Fine open River, 170 ft. wide.
	38	0+	
940	32	0	
	23	6	
	21	6	
	20	6+	
	20	6	
	20	0	
	20	0	
	21	0+	
	22	0	
950	22	0	
	23	6	
	26	0+	
	28	0	
	34	0	
	34	0	
	34	0+	
	30	0	
	30	0	
	30	0	
	27	0+	
	Col. 34.		
22 miles 960	26	0	
	26	0	
	26	0	
	23	0+	
	19	0	
	14	6	Sharp turn to left hand.
	23	0	
	30	0+	
	25	6	
	20	6	
970	20	6	
	20	6+	
	19	0	
	25	0	
	30	0	
	29	6+	
	29	6	
	33	0	
	35	0	
	28	0+	
980	26	0	
	26	0	
	26	0	
	26	0+	
	32	6	Fine open River.
	28	6	
	27	0	
	27	0+	
	26	0	
	26	0	
990	30	0	
	30	0+	
	24	0	
	27	6	
	27	6	
	31	0+	
	14	0	
	14	0	
	14	0	
	13	0+	
1,000	14	6	
	15	6	
	17	0	
	14	6+	
	14	6	
	22	0	
	22	0	

	Col. 34. *continued*		
	Ft.	In.	
	22	0+	
	22	0	
	28	0	
1,010	24	0	
	22	0+	
	22	0	
	22	0	
	19	6	
	Col. 35.		
	19	6+	
	19	6	
	22	0	
	22	0	
	22	0+	
1,020	25	0	
	25	0	
	27	0	
	25	0+	
	27	0	
	27	0	
	25	0	
	24	0+	
	24	6	
	24	6	
1,030	28	0	
	25	0+	
	25	0	
	23	0	
	19	0	
	19	0+	
	19	6	
	24	0	
	19	0	
23 miles	19	0+	Fine open River.
1,040	20	6	
	20	6	
	23	6	
	23	0+	
	18	6	
	18	6	
	18	6	
	20	0+	
	26	6	
	26	0	
1,050	19	6	
	20	0+	
	22	0	
	23	6	
	23	6	
	23	6+	
	17	0	
	17	0	
	17	6	
	14	0+	
	14	0	
1,060	14	0	
	14	0	
	16	6+	
	16	6	
	20	0	
	20	0	
	22	0+	
	24	6	
	26	0	
	Col. 36.		
1,070	20	0	
	22	0+	
	22	6	

	Col. 36. *continued.*		
	Ft.	In.	
	22	0	
	22	0	
	18	0+	
	16	0	
	16	6	
	16	0	
	16	0+	
1,080	16	0	
	16	0	
	20	0	
	20	0+	
	23	0	
	23	6	
	23	6	
	22	0+	
	22	0	
	13	0	
1,090	17	0	
	16	6+	
	16	6	
	16	6	
	15	0	
	15	0+	
	14	6	
	14	6	
	17	0	
	17	0+	
1,100	13	6	
	13	0	
	13	0	
	13	0+	
	12	0	
	11	6	
	11	0	
	10	0+	
	10	0	
	8	6	
1,110	8	0	
	8	0+	
	8	0	
	6	0	
	6	0	
	7	0+	
	7	0	
	7	3	
	5	0	
24 miles	6	6+	
1,120	4	0	
	3	6	
	3	0	Islands and Weir.
	2	9+	
	2	9	
	2	3	
	Col. 37.		
	3	0	
	3	0+	
	3	0	
	4	6	
1,130	4	6	
	5	6+	
	6	0	
	4	2	
	4	0	
	5	9+	
	4	0	
	6	2	
	8	6	
	8	9+	
1,140	8	9	
	10	0	

	Col. 37. *continued*	
	Ft.	In.
	14	0
	11	0+
	13	2
	13	2
	14	0
	15	0+
	23	0
	24	0
1,150	24	0
	24	0+
	23	0
	22	0
	19	0
	16	0+
	23	0
	24	0
	25	0
	24	0+
1,160	21	0
	20	0
	22	0
	24	0+
	22	0
	22	0
	23	0
	20	0+
	20	0
	14	0
1,170	17	0
	16	0+
	14	0
	11	0
	12	0
	13	0+
	14	0
	13	0
	12	0
	13	0+
1,180	10	0
	Col. 38.	
	10	0
	12	0
	12	0+
	10	0
	11	3
	13	0
	12	0+
	11	0
	10	0
1,190	12	0
	10	0+
	12	0
	10	0
	12	0
	12	0+
	12	0
	11	3
	11	0
25 miles	10	3+
1,200	9	0
	9	9
	9	0
	11	3+
	11	9
	10	0
	9	3
	8	9+
	5	9
	3	6
	Ballyforan Bridge.	

Note.—The Crosses on the right hand of the Columns denote the Soundings, which are shown upon the Section, and the Black Lines show the extent of the various Shoals, &c.

Thoˢ Rhodes.

(No. 4.)—REPORT upon the Boyle Water, for the purpose of rendering it Navigable to *Lough Key*, and to near the Town of *Boyle*; also for the Drainage of the Lands on its Shores.

II.
(4.) Boyle Water Navigation.

Amongst the numerous rivers and varied branches leading from the main artery of the Shannon, extending and forming their ramifications in almost every direction of the country, many of which seem marked out in a peculiar manner for useful lines of water communication, the Boyle Water and Lough Key, to near the town of Boyle, is a line which presents facilities of equal if not of greater importance to any upon the line of the Shannon, and one which is deserving of every attention and support, for the purpose of developing the resources of an extensively productive part of the country very remotely situated.

Boyle is one of the chief towns of the county of Roscommon, situated in an elevated part of the country; it is surrounded by districts very fertile in the various descriptions of agricultural produce, and from the rich soil great numbers of fat cattle and other stock are fed for the English and other markets; but it appears to labour under great disadvantages, having no ready market or vent to any of the shipping ports, excepting by land, Sligo being the nearest, and this at a distance of 26 miles, through a district badly supplied with roads of communication, except those of a very inferior description; this renders the carriage by land very expensive, and is found to be a great drawback on the price of native produce, and of course the transit of the various commodities imported is of an equally expensive nature; when, by a good and efficient line of water conveyance, these matters would be performed with comparatively greater ease, expedition, and much less cost, to the ports of Dublin or Limerick, if once the proposed improvements of the Shannon Navigation are carried into effect.

This desirable object can be easily attained and with little cost, being in a manner already formed by nature, and requires only the removal of a few obstacles of small importance from the contracted parts of the Boyle Water, the chief part being of artificial formation; by their removal a navigable communication would be opened from the Shannon to near the town of Boyle, a distance of 11 miles, embracing in this distance the shores of Lough Key.

This distance being then perfected, there is little doubt but it will be extended to Lough Gara and Lough Arrow, thus unfolding a great extent of country to participate in the benefits of commerce, now in a great measure shut out; and it appears that three-fourths of the entire circumference of the county of Roscommon is available, and possesses these capabilities for water communication, by which, if opened, large portions of the adjoining counties would be greatly benefited.

A Map, showing the Boyle Water, Lough Key, Lough Gara and part of Lough Arrow, has been prepared, describing their relative position with the line of the Shannon. No. 13.

To navigate these parts with certainty would require the aid of steam-power, the course being rather circuitous, branching out frequently into deep bays and broad waters, and similar to a chain of lakes, that any other power would prove in many cases unavailable.

The difference of surface level of the waters of the Shannon and Lough Key (summer time) was found only about two feet six inches; viz.

Doctor's Weir - - -	0.07 feet
Cootehall Bridge - - -	1.17
Knockvicar Bridge - - -	1.26
	2.48 = nearly 2 feet 6 inches.

This

(4.) Boyle Water Navigation.

This will more plainly appear by the small Longitudinal Section attached to the Map, and one which has been prepared six inches to the mile, extending from the Shannon to Lough Key, a distance of 6½ miles, on which are described the depth of water, and the shallow parts that require deepening to afford six feet depth of water in summer time; also the height of the winter floods under the influence of the Shannon, which cause the water to back up into Lough Key, inundating large tracts of country.

Within (or near) the first mile from the Shannon some little deepening is required, consisting of gravel and clay, and at this part, the water being broad, would require a number of beacons, as shown on the Map. Passing through the two first small lakes the water is sufficiently deep, it then becomes contracted at a narrow neck at Roostown, separating a branch of the two lakes by a shoal of gravel, the depth being only two feet; from thence and at Cloonacarna it becomes a narrow river course, from 90 to 100 feet wide, at the entrance of which it is intercepted by a ridge of limestone rock, partly in a solid state, extending about 100 feet at the base, and stretching across the river course in prominent points, and rising above the surface 12 inches, leaving one or two openings, scarcely sufficient for a boat to pass. From this part to the Doctor's Weir, being about a quarter of a mile in extent, the river is partially shallow.

The Doctor's Weir is another shoal, which consists of gravel, with an eel-weir thereon; the water was found only nine inches in depth, and this in a very narrow channel. To near Cootehall Bridge the capacity of the channel was found sufficiently large.

Cootehall Bridge consists of eight arches, forming altogether a clear waterway of 116 feet; it is constructed on a ridge of compact limestone rock, of small extent. On the north side it makes its appearance above the water, and dips to the south side considerably under the surface water; immediately above and adjoining the bridge is an eel-weir, constructed of stone, forming a substantial wall, which occupies nearly the entire space of the river course, leaving only a small opening of about seven to eight feet for a passage of the water which flows through one of the centre arches; this obstruction pens up the water, and must be exceedingly detrimental to the low lands situated on each side of Oakport Lough, the general surface on the north side not appearing more (at this dry season) than from 15 inches to 2 feet above water.

Oakport Lough, though of small extent, is very beautiful, having on its south bank the seat of —— Molloy, Esq. surrounded by plantations of fine growth and luxuriance; the depth of water in this lough was found sufficient until entering the narrow part of the river; and a little below Knockvicar Bridge, the bed of which is of a gravelly nature, with a number of stones, its breadth is ample, but partially shallow.

Knockvicar Bridge consists of 10 arches, with a clear waterway of 104 feet; eel-weirs are constructed, which choke up the arches. At the south end of the bridge, there is the remains of an old mill, now dismantled of the greater part of its machinery; the fall of water being only one foot three inches, would denote it as a very improper situation. From this part to the entrance of Lough Key the distance is not half a mile; the bed of the river course consists of gravel and a considerable portion is of limestone rock, some part of which is in a compact state.

Lough Key presents an extensive sheet of water, studded with numerous islands, plantations, &c., and the scenery around is of a very fine character; on the south side is situated Rockingham-house, the beautiful seat and domain of Lord Lorton.

The ideas I have formed for opening the line of intercourse for the navigation and for the drainage are as follow:

By reference to my Report for reducing and regulating the waters of the Shannon at this part, it must be accomplished at the fall and weir of Jamestown-mill, bridge, &c., being the principal or sole cause of all the mischief of inundating the lands in this district. When the proposed alterations are effected as described, the surface water will remain nearly at a permanent height, and about the summer level, extending its surface to Cootehall Bridge.

(4.) Boyle Water Navigation.

I propose keeping by the river course all the way, being less expensive than making canals, and the difference in distance would not amount to many yards in length. The shoals at Roostown, Cloonacarna and the Doctor's Weir, would require deepening to six feet, as described on the Section, with a breadth of 70 feet, which is sufficient for the navigation.

At Cootehall Bridge the navigable channel would require forming on the south end of the bridge, by opening two of the arches into one; the rock appears to dip sufficiently in this direction to afford the depth for the channel. By opening this passage, and removing the eel-weirs and other obstructions, it would reduce the surface of Oakport Lough to the same level as the Shannon, and this level extending to Knockvicar Bridge, making the rise into Lough Key two feet six inches.

At Knockvicar Bridge it would be necessary to construct a lock and weir to overcome the fall, open two of the arches on the south end of the bridge, and continue the navigable channel along the Old Mill Race, which consists chiefly of gravel and large stones; where it enters the river the bed is of limestone rock, but a great portion of it is loose, and presents no difficulty in its removal.

The works necessary to be performed are easy of execution, but would be much more so if carried on with the improvements of the River Shannon, in the district from Jamestown to Battle Bridge, where the shallow parts might be exposed and laid dry; and by employing a sufficient number of men at the various parts requiring alteration, this line might be rendered navigable and safe in one season.

To Colonel Burgoyne, &c. &c. &c.
February 8, 1833.

Thomas Rhodes,
Civil Engineer.

(4.) Boyle Water Navigation.

Estimate.

ESTIMATE.

	£.	s.	d.	£.	s.	d.
10,000 cube yards excavation, to deepen channel from the Shannon to the Church Ruins on left hand.						
4,125 cube yards excavation in the narrow just below Cloonacarna.						
14,125 - - - - - - - - - a' 6 *d.*	353	2	6			
1,555 cube yards lowering the rock at the point of Cloonacarna - - - - - - - - 2 *s.*	155	10	–			
3,360 cube yards deepening the channel of the river to near the Doctor's Weir.						
5,040 cube yards deepening the channel and clearing away eel-weirs at Doctor's Weir.						
8,400 - - - - - - - - - - 6 *d.*	210	–	–			
3,120 cube yards to deepening the channel at narrow pass below Cootchall Bridge.						
4,800 cube yards to form channel on west side, under proposed new arch of bridge (rock and gravel).						
7,920 - - - - - - - - - - - 1 *s.*	396	–	–			
Taking down two arches of the present bridge, and constructing abutments and new stone arch of sufficient capacity, with parapets, wing and retaining walls complete -	500	–	–			
9,576 cube yards deepening from Oakport Lough to Knockvicar Bridge, forming channel, &c. - - - 6 *d.*	239	8	–			
Constructing lock and weir at Knockvicar Bridge similar to those proposed for the Lower Brusna (two feet six inches rise) - - - - - - - - - - -	1,200	–	–			
Taking down two arches of the present bridge, and constructing abutments and new stone arch of sufficient capacity, with parapets and wing walls complete - - -	500	–	–			
10,560 cube yards excavation in deepening and forming channel from Knockvicar Bridge to Lough Key (partially rock and gravel) - - - - - - - 9 *d.*	396	–	–			
10 stone beacons in various parts from the Shannon to Lough Key - - - - - - - - - - -	180	–	–			
Contingent expenses - - - - - - - -	413	–	–			
				4,543	–	6

Thomas Rhodes.

SOUNDINGS taken of the *Boyle Water* from the River *Shannon* to *Lough Key*, 15th August 1832; Datum Water, 3 feet 5 inches on Lower Sill of Battle Bridge Lock.

	Ft.	In.		Ft.	In.		Ft.	In.		Ft.	In.		Ft.	In.	
	16	0		17	0×	1 Mile.	2	6		1	6×		4	6	
	8	0		15	0		2	3		2	0		5	0	
	4	0×		10	0×	Cloona-	2	0	corna.	4	0		5	3×	
	4	6		7	6		2	0×		3	6		5	6	
	5	0		5	9×		2	6		4	3×		6	6	
	6	0		6	0		5	0		6	9		6	9	Cootehall.
	6	9×		6	3×	Island.	10	3		7	3		8	0×	4 Miles.
	7	6		7	3		11	0		8	9		8	3	
	7	6		8	6		7	6		10	6×		5	9	
	8	0		10	9×		9	6		8	6		4	6	
	8	6×		12	6		13	0	>	11	6		7	0×	
	7	9		10	0		12	0×		12	6		6	3	
	7	0		9	6×		12	9		11	0		6	9	
	6	6		9	0		15	6		10	0×		3	6	
	6	6×		8	6×		13	6		10	3		2	9×	
	6	6		8	6		3	0×		11	6		4	6	
	6	6		8	0×	Rocky.	2	3	Rocky.	10	3		6	3	
	7	0		7	9		1	9		9	6×		7	9	
	7	6×		8	9×		1	9×		7	3		9	9×	
	8	3		8	9		2	6		9	0		9	6	
	9	0		8	9×		3	3		10	3		9	9	
	9	9		8	9	>	2	9		9	3		9	9	
	9	6×		8	9×		2	9×		9	3×		9	6×	
	9	6		9	0		3	0		12	0	Oakport Lough, (Mr. Molloy's.) Island in the middle.	9	6	Oakport Lough.
	9	9		9	3		0	0		13	6		9	6	
	9	6		9	6×		0	0		14	0		9	6	
	9	0×		11	0	Narrow	3	6	River.	13	6×		9	6×	
	8	3		14	6		3	6		12	6		9	6	
	7	9		15	6×		4	3×		12	3		9	6	
	6	6		15	6		4	6		11	6		9	6	
	6	6×		15	6×		4	6		12	6×		9	6×	
	6	3		15	6		5	6	<	11	3		9	6	
	6	0		15	6×		4	6×		13	0		9	6	
	5	9		16	0		4	0		12	3		9	6	
	5	9×		16	0		2	9		12	6		9	6×	
	5	3		16	6×		1	6		12	0×		10	9	
	5	3	Wide	18	0	Lough.	2	9×		12	6		13	0	
	5	3		18	6×		3	6		13	0		14	0	
	4	3×		19	0		4	3		13	0		14	6×	
	4	9		19	6		7	6		15	0×		16	0	
	4	6		20	0×		11	0×	<	15	0		22	0	
	4	3		21	6		14	0		15	0		27	0	
	4	9×		20	0×		15	0	Wide	26	0	Bay.	34	0	
	4	3		10	0		16	0		28	0		37	0×	
	5	9		7	6		15	6×		31	0×		29	0	
	7	0		6	9×		13	0		18	6		26	0	
	7	6×		6	9		12	0		10	6		16	6×	
	6	9	Point of Wood.	7	0×	2 Miles.	9	0		5	6		11	6	
	5	9		7	3		5	6		4	3×		7	0×	Narrow
	4	3		7	9		4	9×	Narrow	3	0	Pass.	5	3	again.
Bay.	4	3×		9	0		5	6		2	3	Plantation.	5	6×	
	4	6		10	9×		7	3		2	0		8	6	
	7	0		13	6		7	9		1	6		10	9	
	7	3×		16	0		8	0		1	9×		13	6	Mud
	7	3	Capt.	26	0×		7	3×		2	6		13	6×	bottom.
	7	6	Molloy	23	0		7	9		2	6		16	0	
	7	6×	Roostown	12	0	Limestone,	2	6	Rock.	2	9		19	6	
	7	6	Bay.	8	0	Doctor's	1	3	Weir.	3	0×		16	6	
	7	6		8	9×		1	0		3	6		20	0	
	7	3×		9	6		0	9×	3 Miles.	3	3	Rocky Shore.	26	0	
	7	0		12	0	Cloona-	0	9	corna.	2	9		16	6	
	6	9		14	0		1	0		1	9×		11	0	
	6	9×		16	0×		1	3		2	3		10	0×	
	6	9		16	6		1	6×		2	9		9	6	
	6	9		14	0		1	9		2	9		7	6	
	8	9×		14	6		1	6		2	0		9	6	
	9	0		15	6		1	3		1	6×		10	6×	
	11	6		16	0×		1	9×		Cootehall			12	0	
	13	0×		13	0		1	9		Bridge.			13	6	
	14	0		7	0		1	6		4	0		13	6	
	18	0		4	0		1	3		4	3		14	0×	

(continued)

O 4

SOUNDINGS OF THE BOYLE WATER—*continued.*

	Ft.	In.		Ft.	In.			Ft.	In.			Ft.	In.			Ft.	In.	
	16	0		11	6		Going along the In-take of the Mill.	2	6	The River is on the right hand, but is no deeper.		0	9			1	3	
	17	6		27	6			4	0			1	0			1	0	
	15	6		24	6+			4	3			1	6			1	0	
	17	6+		17	0			3	9			2	3			1	3	
	18	0		17	6			4	3+			2	0			1	9	
	16	0		12	0			2	6			2	3			3	0	
	8	0+		8	0+			3	0			1	0			2	9	
	5	6		8	6			2	6			0	9			4	0	
	5	6	Small Islands. Pass.	8	6			1	7+		6 Miles.	1	3+	Mill Cut.		4	6	<
	5	9		6	0			0	9			2	9			6	9+	
Narrow	5	6+		11	6+			0	9			3	3			5	3	
	5	3		8	6			1	6			3	9			5	0	
	6	9		8	3			2	0			3	6			2	6	
	12	6+	5 Miles.	5	3			1	6			3	0			4	0	
	16	0		2	3+			2	6			1	2			7	6	
	13	0		2	9	River contracts.		2	9			1	0			10	6	
	11	6+		3	3			2	9			1	0			8	9	
	13	0		3	6			2	3			1	0			9	0	
	14	0		3	3+			1	6+			0	10+			12	0+	
	15	0		3	6			1	3			0	9			8	9	
	14	0+		3	3			0	9			0	9			7	0	
	16	6		2	6+			0	4			0	9			8	0	
	19	6		2	9			0	6			0	3			8	6	
	15	0+		2	6			1	3			0	2			5	0	
	11	6		2	0+			3	9			0	4			3	0	
	14	6		1	9			5	3			1	3			3	3	
	13	0		1	6			5	9			1	0			6	3	
	9	6+		1	6			5	6			0	5			8	9	
	8	0		1	6+			6	9+			0	2+			9	6+	
	8	6		1	3			7	0			1	0	Eel Weirs.		8	3	
	8	0		1	3			3	6			0	5			6	6	
	7	6+		2	6			6	0			0	5			3	0	
	8	9		4	9+			1	9			0	5			1	6	
	9	6		11	3			2	0			0	3		Narrow	1	6	Pass.
	11	6		10	3+			1	0			0	4			3	3	
	16	0		6	0			1	7			0	6			6	0	
	22	0+		2	9			1	10			1	0			6	9	
	19	6		Knockvicar Bridge.				1	9			1	0			Enter Lough Key.		
	11	6		1	0			1	0+			1	0					
	7	6+		1	6+			0	9			1	0+					

Note.—The Crosses on the right hand of the Columns denote the Soundings, which are shown upon the Section, and the Black Lines show the extent of the various Shoals, &c.

Thomas Rhodes.

MAPS.

1. General Map of the Shannon.
2. River Shannon, from Portumna to Banagher.
3. River Shannon, from Banagher to Seven Churches.
4. River Shannon, from Seven Churches to Athlone.
5. River Shannon, from Lanesborough to (near) Ruskey.
6. River Shannon, from Ruskey to Carrick.
7. River Shannon, from Carrick to Lough Allen.
8. Section of the Shannon, from Portumna to Lough Allen (in Two Parts).
9. Map of the River Suck.
10. Sections of the River Suck and Boyle Water (in Two Parts)

Detailed Drawings accompanying General Maps.

11. Chart of Lough Derg.
12. Chart of Lough Ree.
13. Map of Boyle Water and Lough Key.
14. Bridges over the Shannon.
15. Proposed New Bridges.
16. Locks upon the Shannon.
17. Proposed Locks for Steamers.
    7. Proposed Bridge at Plassy.
    8. O'Brien's Bridge.
    9. Parteen Rapid.
    10. Falls at Killaloe, Weir, &c.
    11. Portumna Bridge.

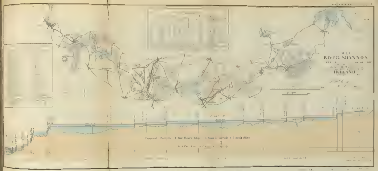
    Those Plans are inserted in the First Report, 11 August 1832, (731), and are marked with the numbers here prefixed to them.
18. Meelick Falls and Weir.
19. Counsellor's Ford.
20. Banagher.
21. Lealinch.
22. Derryholmes.
23. Bishop's Islands.
24. Garrymore.
25. Shannon Bridge.
26. Ballynatave Ford.
27. Tullamore.
28. Rann Island.
29. Athlone.
30. Lanesborough.
31. Kilnacurragh.
32. Lodge Cut or Knappogue.
33. Tarmonbarry and Camlin River.
34. Clooneencox.
35. Clooneenkennedy and Cloonfad.
36. Bird Island.
37. Ruskey.
38. Derrycarney.
39. Jamestown.
40. Curnacurra.
41. Port.
42. Section of Lough Allen Canal.

Drawings connected with the Survey, but not included in this Paper.

6. From Limerick to Killaloe.
15. Scariff River.
16. Woodford River.
17. Ballyshrule River.
19. Lower Brusna River, from Meelick.
    Lower Brusna River, to Parsonstown.

These Plans are inserted in the First Report, 11th August 1832, (731), and are marked with the numbers here prefixed to them.

CARLTON CLUB


MAP
RIVER SHANNON
IRELAND
General Section of the River Shannon from Limerick to Lough Allen